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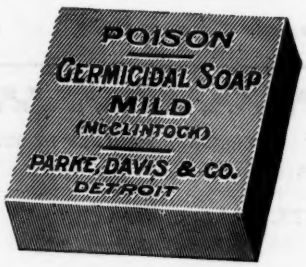

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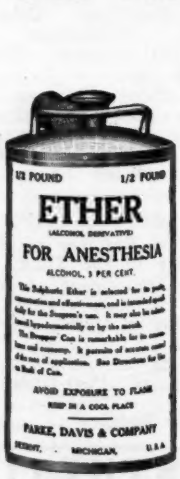

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THE INDICATIONS AND CONTRAINDICATIONS FOR THE OPERATIVE AND TRUSS TREATMENTS OF HERNIA.*

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The ultimate results of the modern operative treatment of hernia in experienced hands are so excellent, the dangers of the operation in uncomplicated herniae so negligible that, even at the risk of perpetrating an Hibernianism, I may say that an operation is indicated in every case of hernia, in which there are no contraindications. As will be seen these contraindications are very few; nevertheless they are very important, and therefore merit more than passing consideration.

1. All complicating diseases of sufficient gravity are *eo ipso* excluded from operation; this is particularly true of all systemic diseases, for instance, florid syphilis, advanced pulmonary tuberculosis, etc.

2. All acute infectious diseases, particularly all the infectious diseases of infancy, should be looked upon as a temporary contraindication to a radical operation for hernia.

3. Particular attention should be paid to all diseases of the respiratory tract. Individuals afflicted with chronic emphysema, chronic bronchitis, etc., do not stand any operation well; moreover in an operation for hernia the constant coughing, which is a prominent symptom in these patients, puts so much strain upon the integrity of the very important suture line that the possibility of a recurrence is thereby materially increased.

4. Uncompensated valvular lesions should never be subjected to any but the most urgent of operations; as in a majority of the cases of hernia the operation is somewhat in the nature of a prophylactic one there is therefore no reason why they should be subjected to the risks incident to their cardiac affection. If the compensation is good, however, a radical cure may be undertaken if the hernia is at all irksome to the patient.

5. Diabetes is a contraindication only in individuals who cannot be made sugar-free. While perfect aseptic healing is the rule in all hernia operations, it cannot be denied that slight infections do occasionally occur; such slight infections are, as a rule, of no consequence in individuals in perfect health, and are not of necessity a bar to an ultimately perfect radical cure; but the abnormally high glucose content of the blood of diabetics offers such a splendid culture medium for bacteria that even a slight infection may cause very grave and sometimes even fatal consequences.

6. Affections of the kidneys are contraindications, because individuals so afflicted are not good risks for a general anesthetic. If the nephritis is not very bad and the hernia is very irksome an operation with local anesthesia may be considered. I have repeatedly placed myself on record as being opposed to local anesthesia in the operation for the radical cure of hernia as a routine measure. I believe, however, that a complicating nephritis forms a justifiable exception.

7. Perfect aseptic healing being a most important essential to the radical cure after an operation for hernia it is very important that the integument at the site of the operation be in a healthy condition. I exclude therefore from operation, temporarily at least, all those dermatological conditions which are a bar to an operative asepsis, for instance, acute or chronic eczemata, acne, psoriasis and other scaling conditions, etc.

8. In my experience with the operative treatment of hernia, one of the most frequent postoperative complications has been that of retention of urine, requiring very often the repeated use of a catheter to empty the bladder. As it is always preferable not to introduce any instruments into the bladder, through an infected urethra, I have always refused operation in the presence of an acute urethritis of gonococcal origin.

9. As catheterization may even be impossible in the presence of tight urethral strictures, I prefer in these cases to first dilate the urethra, and only

* Read, by invitation, at a meeting of the Eastern Medical Society, April 9, 1915.

when this has been accomplished do I advise an operation for the hernia.

10. I look upon very early infancy as a contraindication to the radical operation for hernia. In former years I made it the rule to decline to operate for hernia upon children under the age of three years; in recent years my views have been modified, and now I frequently operate upon children below that age. The only danger, especially in the most common form, namely oblique inguinal hernia, is that of an infection of the wound from urine or feces; but as a rule, the urine is sterile in young infants, and I have never seen an infection of the wound, even if, as so frequently happens, the wound is literally bathed in urine. Infection of the wound from feces can be guarded against by appropriate dressings, care and watchfulness. An all important consideration is the social status and surroundings of these little patients. The wealthier classes have the time and can afford the necessary attention that truss treatment entails, at least until the child reaches the selective age. Among the poorer classes no good comes from the truss treatment, and the indications for such treatment are becoming more and more restricted, in favor of earlier operation.

11. Very advanced age must also be looked upon as a contraindication. The term "very advanced age" is, however, a very elastic one; and it should not be forgotten, that some individuals are already old at forty, while others are still young at seventy. I have no hesitancy in stating that the recuperative, and above all, the reparative powers are somewhat below par with advancing years. In addition, individuals of advanced age are particularly prone to the development of post-operative respiratory complications, such as hypostatic pneumonia, which is more than likely to develop when such individuals are confined to bed.

12. As to the hernia itself, the only contraindication that arises is that of extreme size. Herniae that have been neglected occasionally attain such enormous proportions that practically the entire intestinal tract has become prolapsed. It has been aptly said of these herniae, that the contents have lost their right of domicile within the abdomen. Very frequently they are irreducible, but even if reducible, the sudden refilling of the abdominal cavity is apt to cause a dangerous embarrassment of the respiration and circulation. Even in these cases much can be done by carefully carried out reduction cures, in order to reduce the amount of fat within the omentum and mesenteries, and by a gradual replacement of the hernial contents, which gradually stretches the abdominal cavity, so that it can again accommodate the viscera.

Thus far I have enumerated only the most important contraindications to an operation for the radical cure of a hernia; there are undoubtedly many more. In this connection it is only proper to again call attention to the importance of a careful physical examination, in order to insure against possible surprises.

Important as these contraindications are, they are all absolutely negligible in the presence of strangulation if mild and gentle taxis has failed to reduce the contents. In the presence of such a strangulation there are absolutely no contraindications.

If the contraindications just enumerated are reviewed it will become evident that for practical purposes they may be divided into two main groups; namely those of a temporary nature, and those of a permanent nature. The very term "temporary" is sufficiently explanatory, and requires no further discussion. A most important question, however, arises in the second, or permanent group of contraindications, namely, that of adequate treatment. It is in the presence of these only that recourse should be taken to palliative treatment, so-called.

By the expression, "palliative treatment," I refer to the placing of artificial external barriers in front of the opening, through which the hernial contents escape. These barriers act upon the principle, that a pad of varying size and shape is firmly held against the opening by means of springs or elastic bands. Such appliances are called trusses.

While it cannot be denied, that the wearing of a truss will in some instances be followed by disappearance of the hernia, or better said, by a failure of a reappearance of the hernia, I have no hesitancy in stating, that a radical cure, in the accepted surgical sense, is of such an exceptional rarity as not to merit serious consideration. If the pathology and pathogenesis of hernia is considered, it is self-evident that no radical cure of hernia is possible, unless the hernial sac is either extirpated or obliterated. It can, of course, be conceived that the pressure of a truss may cause so much trauma to the endothelial lining of the peritoneal sac, as to cause agglutination of its walls; but to expect a truss to do so, just at that anatomical location, which we call the internal ring, is, to my mind, expecting rather much from inanimate objects. So-called cures can be accounted for in one of two ways. Assuming, for instance, that a truss is applied for a number of years, to a congenital inguinal hernia in a child, and is then discarded, such a patient may be cured, because the normal oblit-

eration of the processus vaginalis has been completed; or the cure may be only an apparent one. After the lapse of years, the presumably cured hernia reappears, and at operation it is found that the hernia is still of the congenital variety.

A description of the various kinds of trusses, the advantages of one over another, their method of manufacture, etc., is not within the scope of my discussion. It is quite within my sphere, however, to call attention to certain fundamental principles in the use of trusses, to their drawbacks and to their limitations.

When a decision is reached that a given case is suitable for treatment by a truss it is not sufficient to send the patient to an instrument or truss maker, or worse still, to the corner druggist, with an order to buy a truss. Full directions must be given as to the variety of the hernia, whether direct or indirect, inguinal, or femoral. All of us have seen inguinal trusses worn over femoral herniae, and vice-versa.

It should be the physician's duty to assure himself that the truss retains the hernia, not only when the patient is standing quietly, but also that it does not shift on sitting or lying down, in rapid walking, or in walking up or down stairs. It should be his duty furthermore to see to it that the pressure of the pad is applied over that point of the hernial roadstead where it is most likely to exert its influence in the proper retention of the hernial contents. Every hernia escapes from the abdomen at an internal ring, so-called, and maximum pressure should be applied at this ring.

It is the aim of most dealers in trusses to fit the patient not only to a truss, but to the particular truss which they happen to be interested in. The important point appears to be to make a sale. Whether the truss fits the individual or not, whether the truss retains the hernia or not, whether the spring is too weak or too strong, is entirely of secondary consideration; and yet all these factors are not only conducive to the comfort of the patient, but fall fully within the domain of the physician supervising the health of his patient.

A *sine qua non*, and yet a rule as frequently observed in its breach as in its observance, is that the hernial contents be not only completely reduced prior to the application of the truss, but be at least completely reducible. If retention of the hernial contents is impossible, the application of a truss is absolutely contraindicated, not only because it is useless, but also because it may do considerable harm. A truss in such instances may be the source of considerable pain, and may give rise to saccular adhesions, with their attendant dangers. Despite this contraindication I have seen this rule violated very frequently.

I have purposely refrained from discussing at great length the discomforts of wearing a truss; that these are actual is amply proven by the fact that patients frequently seek operation only with the view to be rid of them.

I am absolutely convinced of the fact that the modern operation for the cure of an uncomplicated hernia in experienced hands and in a modern hospital is practically devoid of danger, also that, similarly carried out, the final results are so excellent, that it may be stated without danger of contradiction, that the operation is in reality a blessing to the many individuals afflicted with hernia. However, I do not urge operation in every case that comes to my observation. For my own purposes, I have planned the following routine, when a patient with a hernia presents himself to me for examination.

1. A complete history is taken, particular stress being laid upon the complaints of the patient; in other words, whether or not the hernia causes any symptoms or physical complaints, in addition to the mere presence of a hernial protrusion.

2. An exact anatomical diagnosis of the variety of the hernia is made, i.e.; whether direct or indirect, inguinal, femoral, etc.; as to the reducibility of the contents, their probable nature, the presence or absence of bladder symptoms, the presence or absence of an undescended testis, etc.

3. A thorough physical examination is made, particularly as regards the condition of the heart, lungs and kidneys, in order to find any contraindications.

4. No contraindication to operation being found, either in the general or local condition, an operation is advised. The dangers of the operation are not minimized, but truthfully explained; also the chances of a radical cure. At this stage the patient usually inquires as to the possibility of obtaining relief from wearing a truss. I have made it a rule not to advise against the use of a truss except in those cases in which there is an absolute contraindication to their use, for instance in irreducible herniae, or in the presence of an undescended testis, or in the presence of such herniae in which physical examination leads me to believe that there will be insurmountable difficulties in the retention of the hernial contents. However, I never fail to impress upon the patient, that I do not look upon truss treatment, in any sense of the word, as curative. The patient ultimately is made to fully understand

the *pros* and *cons*, and it is he who should finally seek operation, and not the surgeon who should seek to operate.

ACUTE GONORRHEAL EPIDIDYMITIS AND ITS TREATMENT.*

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ETIOLOGY.

Gonorrheal epididymitis is always an extension of a posterior gonorrheal urethritis. It has been variously assumed that this extension takes place,

1. Through the blood stream.
2. Through the lymphatics.
3. By direct extension of inflammation along the vas.
4. By gonorrheal toxins.

The objection to the theory of extension through the blood stream is the fact that there is a great discrepancy between the number of epididymitides and involvements of other parts of the body. Why should the testicle be immune if the extension were through the blood stream?

The lymphatics may be excluded as a factor in the extension because, (a) the lymphatic current runs in the direction opposite to the spread of infection; (b) it has been shown histologically by Nobl that the epithelial lining is the only portion of the vas which is involved in cases of epididymitis; the lymphatics surrounding the vas show no involvement.

The extension of gonorrheal inflammation in the urethra is very slow. It takes over two weeks to reach the posterior urethra from the meatus. How can we explain the rapid and sudden outset of an epididymitis on the assumption that the extension is by contiguity along the lining of the vas? On the contrary, it is a well known fact that the vas is never involved before the epididymis, though sometimes secondarily.

The toxic origin of gonorrheal epididymitis is untenable because gonococci have been repeatedly demonstrated in the epididymis.

In a very scientific and convincing paper, Oppenheim and Loew have pointed out the modus of infection. They showed in animals and human beings that an antiperistaltic movement of the vas follows stimulation of the hypogastric nerve.

By antiperistaltic movement is meant a peristalsis from the urethra to the epididymis, i.e., in the direction opposite to that normally taken by the spermatozoa. The hypogastric nerve can be reflexly stimulated by irritation of the colliculus as in instrumentation, prostatic massage, coitus, forced bodily movements and emissions. As a result of this antiperistalsis, gonococci are carried from the posterior urethra through the vas to the epididymis. The first portion of the epididymis to become involved is invariably the tail, and it is here that the antiperistaltic wave is interrupted by angulation of the tubule. Oppenheim and Loew also proved that direct galvanic stimulation of the colliculus resulted reflexly in antiperistalsis of the vas. When cocci were placed in the posterior urethra of rabbits and the colliculus galvanically stimulated, epididymitis, in which these cocci were demonstrated, was produced.

PATHOLOGY.

In acute inflammations of the epididymis, all of its coats are usually involved. The picture varies with the intensity of the inflammatory process from cases in which the epithelium lining the tubules alone is involved to cases in which there is abscess formation in the paracanalicular connective tissue.

The changes are always most marked in the tail. In the very mild cases, there is proliferation and degeneration of the epithelial lining of the tubules, round-celled infiltration of the membrana propria and muscular walls of the tubules, and some round-celled infiltration and serous exudation into the surrounding connective tissue. There is some dilatation of the capillaries with round-celled infiltration of their walls.

In the very severe cases there is marked desquamation of the epithelial lining of the tubules, with obliteration of the lumen in many places, due to pressure of the surrounding swollen connective tissue. In places the tubules are very markedly dilated and their lining may be completely destroyed, so that their contents are directly continuous with the inflammatory material in the surrounding connective tissue.

The blood-vessels show marked engorgement. The most striking changes are seen in the connective tissue. There is extensive round-celled infiltration with breaking down of tissue in many places, resulting in abscess formation. In these abscesses gonococci have been demonstrated. Cunningham found gross pus in varying amounts in sixty-seven per cent. of his cases of epididymitis. Mond and Terillon, in experiments confirmed by Hagner, proved that the characteristic shape of the swelling in epididymitis is due to the infiltration of the connective tis-

* Read at a meeting of the Genito-Urinary Section, New York Academy of Medicine, March 17, 1915.

sue between the tubules. They injected gentian violet into this intertubular connective tissue in cadavers and reproduced the typically shaped swelling. Similar changes to those found in the tail occurred to a lesser extent in the body and head. Sometimes they are absent here altogether.

The vas is the only portion of the cord which is involved. The changes here are confined almost entirely to the epithelial lining and are most marked nearest the epididymis.

In the severe cases there is usually an involvement of the tunica vaginalis, which results in hydrocele, and associated with this there is often an edema involving the skin of the scrotum. The scar resulting from this inflammation may result in permanent obliteration of some of the tubules of the epididymis with a resultant sterility. Buxla found no children in 41.7 per cent. of bilateral epididymitides in the German Army. Liegeois, in twenty-eight cases of double epididymitis, found absence of spermatozoa in twenty-one.

METHODS OF TREATMENT.

These can be divided into expectant and operative. Until the last few years, the treatment was entirely expectant, and consisted of rest in bed, hot or cold applications, support, and topical applications such as guaiacol, ichthyol, etc. With these methods patients were usually confined to bed from one to six weeks. Electricity has been used with satisfactory results. Schindler tried Bier's hyperemia, and finding it unsatisfactory, employed puncture with a needle. He claims good results whether pus is present or not. Repeated punctures at one sitting were found to give the best results. He claims that by this method pain is more rapidly relieved and the temperature drops sooner to normal. This improvement he attributes to the relief of congestion by bleeding and diminution of tension by opening the capsule. This method must be rather painful (he uses a fairly large needle) and can not surely cause a return to normal. Fruehwald does not agree with Schindler, being of the opinion that the relief of pain and fever from puncture are only temporary.

Baermann introduced a needle along the entire length of the epididymis, aspirating during withdrawal. By this method he was able to find more than one pus focus. Schindler and Bruck advise the administration of atropin for the purpose of paralyzing the muscular coat of the vas, thus preventing antiperistalsis. They claim in this way to have diminished the number of epididymitides complicating their cases of gonorrhea. Leschner has used antigonococcus serum but the results are not encouraging.

Hagner makes a free incision, six to ten centimeters long, under general anesthesia at the junction of the swollen epididymis with the testis, through the scrotum and tunica vaginalis. The fluid in the tunica is evacuated and the swollen epididymis is delivered. Multiple punctures are made with a tenotome. If pus is found, the punctures are enlarged and washed with a 1 to 1,000 solution of bichloride of mercury and saline solution. A cigarette drain is inserted and the wound is sutured. The wounds heal in a week. All cases but one were out of bed and free of pain in seven days. One of Hagner's cases recurred. One bilateral case in which a double epididymotomy was done was followed by azoospermia. Bromberg reports an epididymotomy in which there was so violent an infection as to necessitate removal of the testis.

The disadvantages of Hagner's method of treatment are the necessity for general anesthesia, the confinement to bed for one week and the fact that there is no return to the normal. Paul Asch employed injections of silver nitrate of 2 to 5 per cent. into the epididymis, with a small needle, and later used protargol in 10 per cent. solution. This shortened the duration of the epididymitis and left a smaller infiltrate, but the method was very painful. Following Harmonics he then employed electrargol injections. He claimed that while there was an immediate increase in the pain, this was greatly diminished in twelve to twenty-four hours. In early cases one injection generally sufficed, but in more advanced cases, repeated injections were necessary, in some cases as many as five. Patients were able to return to work after three days even in severe cases. One case lasted eight days. In a trial of this method I found that in spite of the greatest refinement of technic, such as warming the solution, using a very fine needle, injecting very slowly, and distributing the fluid evenly throughout the epididymis, the pain was unbearable. However, the subjective symptoms and fever rapidly improved after twelve to twenty-four hours, but the infiltration invariably remained. I then substituted saline for the electrargol, with identical results. This naturally suggested the use of novocain. Injections of novocain were used in sixty cases in the following manner: The scrotum over the epididymis was painted with tincture of iodine. Two to six cubic centimeters of a sterile two per cent. novocain solution were injected directly into the inflamed epididymis with an ordinary hypodermatic syringe, through a very fine needle. The fluid was evenly distributed throughout the inflamed area, the needle being inserted through the

skin but once, yet withdrawn from the epididymis to be reinserted at different points and at different angles. If the tail only was involved, the injection was limited to this area. At first two cubic centimeters were used. It was occasionally found necessary to repeat the injection one or two days later. I came to the conclusion that the entire inflamed area had not been covered, and therefore I used up to six cubic centimeters. Thereafter one injection usually sufficed. In five or six cases two injections were used, but never more. There was a slight momentary pain due to steadying the epididymis with the hand and to the introduction of the needle. As soon as the fluid entered the epididymis the pain ceased. After three-quarters of an hour there was a slight sensation of weight and pressure and, rarely, slight or moderate pain. This disappeared entirely in the course of a few hours. The patients were generally able to return to work at once. No other treatment was employed except for the wearing of a suspensory.

The temperature returned to normal within twenty-four to forty-eight hours. The feeling of malaise disappeared immediately after the injection and recurred to a slight extent for a short time some hours thereafter. In those early cases in which the tail only was involved, we obtained the best results. The swelling generally did not extend to the body and a minimum of scarring was left. The swelling disappeared very gradually. In two or three weeks it had returned almost to normal. In the more advanced cases, in which the entire epididymis was involved, the subjective improvement was equally good but the resultant scar persisted longer (four to five weeks) and remained larger. In two such cases in which edema of the skin was already present, hydrocele occurred subsequently without subjective symptoms. In one case of double epididymitis treated in this way azoospermia resulted. The treatment of the urethral gonorrheal was uninterrupted during this time.

Outlines of a few typical cases follow:

CASE I. J. D., No. 432, age 22 years. Acute gonorrhea began November 10, 1911. On November 29th, pain and swelling of right epididymis. December 1st, injection of 2 cubic centimeters of electrargol into head and 2 cubic centimeters into tail of epididymis. The pain of injection was very severe and lasted three-quarters of an hour, followed by slight pain, less severe than before injection. All pain disappeared except in the inguinal region the morning after, and patient went to work.

December 4th: Epididymis not tender, smaller, less hard; cord somewhat tender, still much enlarged.

December 16th: Again slight pain in cord and epididymis; injection of 1 cubic centimeter of electrargol into head and 1 cubic centimeter into tail. Followed by pain as before and next morning subsidence of all subjective symptoms. Scar in epididymis, small and hard, persisted.

CASE II. S. J., No. 211, age 26 years. Gonorrhea eight years ago.

April 21, 1913: History of painful swelling in left epididymis for eleven days. Examination of secretion at meatus showed much mucus, few pus cells and urethral epithelium, but was free of bacteria. Prostatic secretion showed few pus cells and no bacteria. Entire left epididymis very large, hard and exquisitely tender. Injected 5 cubic centimeters warm sterile water into epididymis. Followed by severe pain lasting thirty minutes after which patient had slight pain for two hours and none since, but feeling of weight persisted some days.

April 25th: Epididymis very large, hard and not tender.

January 16, 1914: No symptoms since above data. Epididymis feels normal except for slight thickening of tail.

CASE III. D. L., No. 394, aged 27 years. Acquired gonorrhea October 6, 1913. Developed left sided epididymitis.

October 24th: Injected 2 cubic centimeters of one per cent. cocain.

October 27th: Patient states that pain was immediately relieved after injection, but recurred about one hour later and lasted for six hours: no pain since. Tail is found enlarged, but not tender.

November 7th: Has had pain and swelling of right epididymis for two days; 4 cubic centimeters of one per cent. cocain injected.

November 11th: One-half hour after injection pain in groin, very severe and lasting only three hours. Two days later slight pain in groin, but entirely free of pain again in twenty-four hours. Following a hot bath, November 10th, 11 p. m., pain recurred. Injection of 6 cubic centimeters of one per cent. cocain into head and tail.

November 12th: Above injection relieved patient of all pain for fifteen minutes. Pain recurred for twelve hours; since then entirely free. Epididymis enlarged, hard, very slightly tender.

December 3, 1913: Both epididymes show nodules on lower poles which are not tender. Spermatic fluid shows no spermatozoa.

Case IV: J. F., age 22 years. Acquired gonorrhoea October 12, 1913. Gonococci were demonstrated in the prostatic secretion November 17, 1913. Came for treatment very regularly.

November 26th: Patient states that he had pain in right scrotal region one week ago with swelling lasting one day. Two days ago pain and swelling, growing worse to date. Entire epididymis much enlarged and exquisitely tender. Fainted in subway while coming to office. Injected 8 cubic centimeters of one-half per cent. novocain.

November 27th: Reports that he had no pain for three-quarters of an hour after injection, then felt chilly for a short time, and pain recurred

slightly. Went to bed and slept well, awakening next morning without pain and with only slight tenderness. Has been at work daily without inconvenience.

December 1st: Lower pole moderately hard, smaller, not tender, upper pole not tender.

December 3rd: Epididymis not tender, growing smaller.

December 10th: Epididymis normal but for small nodule which is not tender.

CASE V: N. S., aged 23 years, car conductor. Acquired gonorrhea December 12, 1914. Gonococci found in prostatic secretion December 25, 1914.

January 4, 1915: Entire half of scrotum and contents markedly enlarged, skin edematous, and epididymis exquisitely tender. Vas enlarged and tender. Can hardly walk. Temperature at 3 p. m. 102.8° F. Injection of 6 cubic centimeters of one per cent. novocain.

January 5th: Temperature 100.8° F. Epididymis large, hard, not tender; cord slightly tender; is working.

January 6th: Walks without pain; has been working steadily; epididymis not tender, swelling as before. Temperature 3 p. m. 98.8° F.

January 13th: Epididymis smaller, softer, not tender; no pain; has not lost a day's work, suffered no inconvenience since injection.

February 1st: Small scar in epididymis, not tender or painful.

CASE VI: G. P., No. 447, age 35 years. Acquired gonorrhea November 12, 1914. Had prostatic abscess. Gonococci demonstrated in pus from abscess. Left epididymitis December 9th; injected 4 cubic centimeters one per cent. novocain into tail and body.

December 14th: States that pain ceased immediately after injection; recurred slightly for some hours and then disappeared completely. Epididymis large, very slightly tender.

December 21st: Epididymis is smaller, not painful, very slightly tender.

February 5th: Left epididymis contains nodule which is not hard but elastic and is neither painful nor tender.

CASE VII: R. W., No. 482, aged 45 years, laborer. Acquired gonorrhea November 21, 1914. Epididymitis right side, January 11, 1915. Injection of 6 cubic centimeters of one per cent. novocain into entire epididymis. Pain disappeared entirely for one-half hour and then recurred to lesser degree for some hours. Skin over scrotum and over inguinal canal edematous.

January 29th: Hydrocele developing on right side, no pain or tenderness.

Conclusions: In comparison with previously described methods of treatment of epididymitis, it is evident that the above described method possesses the following advantages:

First. Patients are not confined to bed and can carry on their regular occupations.

Second. The treatment is painless.

Third. It can be done in ambulant fashion.

Fourth. It causes the temperature to drop at once to normal.

Fifth. Incision under narcosis with attendant dangers are obviated.

Sixth. Cases injected early with the tail alone involved are aborted (no spreading to body or head).

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COMPRESSION FRACTURE OF THE UPPER EXTREMITY OF THE TIBIA.

The mechanism of compression fracture as given by Wagner is essentially as follows: The patient falls striking on the feet with the knees in extension and the force of gravity, acting through the femur on the tibia, drives the inferior surface of the internal condyle of the femur against the superior surface of the inner tuberosity of the tibia, the force of the impact breaking the tuberosity from the tibia. In the same manner, in patients having a moderate amount of genu valgum, or where the force of the impact acts obliquely tending to abduct the leg at the knee joint, the force acts through the external condyle of the femur and a fracture of the outer tuberosity of the tibia is the result.—A. C. BURNHAM in the *Medical Record.*

THE APPLICATION OF MODERN UROLOGICAL METHODS IN THE DIAGNOSIS OF SURGICAL CONDITIONS OF THE URINARY TRACT.*

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In the examination of patients admitted to the urological service of Mount Sinai Hospital, we have endeavored to follow a certain routine procedure. It is advisable to carry out the different steps of the examination in their proper sequence. By so doing considerable time is saved, and unnecessary re-examination will often be avoided. For example, it would be unwise to cystoscope a patient before resorting to roentgenography; for, should the latter demand a pyelogram or a ureterogram for confirmation, it would entail a second cystoscopic examination; cystoscopy, ureteral catheterization and uretero-pyelography could all have been combined at one sitting.

The following has been the most satisfactory order of the different steps in the examination: 1. History. 2. Physical examination. 3. Urinalysis. 4. Roentgenography. 5. Instrumental examination, including cystoscopy, urethroscopy and uretropyelography. This routine applies mainly to renal and ureteral cases; in prostatic, urethral and bladder conditions, uretheral catheterization and instrumentation are in order before resorting to roentgenogaphy. It will of course be unnecessary or impossible in every case to follow out all these steps. Frequently, however, it will be found necessary to resort to all the means at our disposal before a definite diagnosis can be made.

I shall have but little to say concerning the history and physical examination. Everyone realizes their importance and the valuable data occasionally obtained. However, it is especially in urological cases that both may be misleading or valueless, and we have to depend upon the special examinations for more definite and accurate information. I shall therefore here illustrate the more specific procedures employed in urological diagnosis.

Urinalysis: This part of the examination is carried out as follows: At first a single specimen of urine is examined in the routine way. In females the specimen should be obtained by catheterization.

A twenty-four hour specimen is then collected with the patient on ordinary full diet (unless otherwise contraindicated), and examined quantitatively for urea. When greater accuracy in the determination of urea is desirable a second twenty-four specimen is collected, the patient having been placed on ordinary full diet, with the addition of meat and six eggs a day.

Roentgenography is part of the routine examination of every patient in whom there is a suspicion of urological condition. Such a routine examination often discloses very unexpected findings.

Cystoscopy, ureteral catheterization and pyelography will be taken up in their proper sequence.

I intend now to discuss in detail a few of the more common diseases of the urinary tract with a description of the methods of diagnosis employed, and shall first take up the subject of urinary lithiasis, under the headings of renal, ureteral and vesical calculus.

Renal calculus: The information obtained by a careful history, physical and urinary examination may be of an entirely negative character, and still serious disease be present. It is as yet not generally recognized that stones may remain latent in the kidney for a long time, reaching a large size, and even destroying the parenchyma without producing focalizing symptoms. According to Cabot[1] pain is absent in about 10 per cent. of the cases of renal calculus, renal colic is present in about 50 per cent., and pain without colic in 30 per cent. In connection with the subject of pain, it is important to recognize the fact that occasionally the pain may be referred to the opposite side. Frequency of micturition is present in a large number of the cases, but its absence is of no diagnostic value.

Urinalysis gives valuable data in many of the cases, but it must be borne in mind that stones may be present with only microscopic changes in the character of the urine. Albumen, pus and blood are present in over 80 per cent. of the cases. Stones may exist without the presence of red blood cells in the urine. It will thus be seen from this cursory review that unless more specific means for diagnosis are adopted many cases of renal calculus will be overlooked or mistaken for other conditions, and consequently many patients subjected to needless operations. Failure to take proper cognizance of these facts will still lead many to treat renal calculus for lumbago, sciatica, cholecystitis, appendicitis and other conditions.

Roentgenography, cystoscopy and ureteral catheterization and pyelography are indispensable diagnostic agents in the examination for renal calculus. Of the three roentgenography is the most valuable procedure.

The roentgen-rays will demonstrate the presence of renal calculus in probably 98 per cent. of the

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cases. The stones likely to be overlooked are of the pure uric acid variety, a rare form. Thomson Walker[2] has recently stated,[1] "that in an aseptic case the absence of a stone shadow after two or more examinations when a plate of the first quality has been obtained excludes all but a pure uric acid calculus. When the urine is alkaline the absence of a stone shadow excludes a calculus of any composition, for it is certain that phosphates will have been deposited upon a uric acid calculus and render it opaque to the roentgen-ray." Every roentgenographic examination of the urinary tract should include both ureters, kidneys and the bladder, for occasionally the pain is referred to the opposite kidney, or bilateral calculi may be present, with symptoms on only one side. In order to determine whether a plate is of good quality, it is essential that besides the bony structures it should demonstrate the kidney shadows and the outlines of the psoas muscles. It is not alone sufficient to make a diagnosis of renal calculus; an endeavor should be made to determine definitely the position, size and number of the stones. Such data, needless to say, are of inestimable value to the surgeon. In the majority of cases he should be able to decide from a careful study of the roentgen-ray plates whether it is feasible to remove the calculus through an incision into the renal pelvis (pyelotomy), or through the renal substance (nephrotomy).

From the density of the shadow thrown by the stone it will often be possible to obtain an idea of its chemical composition. Calcium oxalate calculi generally cast the densest shadow, then come the cystin stones, which are very rare, and the next the phosphate of lime stones.

In order to more accurately localize the position of shadows, Fenwick[3] has divided the loin space into an inner and outer division by a line running vertically upwards from the center of the crest of the ilium to the ribs. This line is known as the midvertical and Fenwick formulates the following statements:

"A. Shadows outside the midvertical are usually cast by contents in the bowel.

"B. Shadows inside the midvertical line are usually urinary shadows, or rarely cretaceous gland shadows.

"C. Shadows arranged along the midvertical or near it are not infrequently collections of stones in the cortical portion of the kidney.

"Even making allowance for abnormal position and for extreme downward displacement of the kidney, the shadows of stones in the kidney will still fall (if the lamp be mesial) within or on the midvertical."

A small oval or heart-shaped shadow on a level with and close to the transverse processes is of the first and second lumbar vertebrae is generally due to a stone located at the uretero-pelvic junction. The position of the shadow will vary however, if the kidney is ptosed.

At times, however, notwithstanding careful study of the roentgen-ray findings, errors will be made in their interpretations, and extrarenal shadows will be diagnosticated as intrarenal. These mimetic shadows in the renal region may be due to intestinal concretions, calcified lymph glands in the mesenteric group or gall stones. A very dense, sharply-outlined shadow, especially if it be somewhat irregular should arouse suspicion as to its intrarenal position (even if the negative shows it to be within the kidney shadow) and demand corroboration. Within the past year we have had under observation three such cases; all showed distinct shadows in the renal region, and were associated with pronounced renal symptoms, including colic in one case, pain hematuria, and pyuria in another. So typical were the findings considered that no further evidence was thought necessary. At operation no stones were found; in two of the cases the shadows were discovered to be due to lumbar glands, and the urinary condition was the result of a colon bacillus infection. In order to avoid such errors, and to assist in identifying extra- from intrarenal shadows, and as an aid in their localization, pyelography will be found of considerable value.

Used with discretion pyelography may be considered a safe procedure. The technic we employ is as follows: The ureter on the suspected side is catheterized to the pelvis. It is advisable to use a catheter that does not occlude the ureteral lumen, in order to allow a return flow. Before injecting allow all the urine in the pelvis to drain out, this will avoid injecting a distended pelvis and so producing dangerous pressure. We employ either argyrol 40 per cent. or collargol 15 per cent., and inject with a 10 c.c. Record syringe after the roentgen-ray plate and apparatus have been properly adjusted for taking the exposure. The syringe can be accurately gauged, and more easily controlled than by the gravity method. There is no danger of causing injury if the pelvis is not overdistended. For this reason it is often advisable to determine the capacity of the pelvis by filling it with methylene blue, after which the silver substance may be injected with a greater degree of safety. It is seldom necessary to inject more than 5-6 c.c., and should the patient complain of pain before this, the injection should be stopped. By following this technic we have had no unpleasant effects.

The data that will aid us in determining the localization of the suspicious shadow will depend upon its distance from that of the renal pelvis as well as the relation it bears to the pelvic outline. Distortions in the pelvic outline are also of diagnostic value; they are due to inflammatory process caused by the stone, or result from back pressure from obstruction. However, too much stress must not be laid upon abnormalities in the pelvic outline, for renal infection producing distortion of the pelvis and calices may exist in the absence of stone. Comparison should be made in all cases between the shadow in the original plate and the pyelogram.

If the stone is in the pelvis of the kidney its shadow will be either diminished or obliterated by collargol. The pelvis and calices, however, will often show some changes in outline, either irregularity or dilatation. A calculus situated in a calyx may be localized there when its shadow can be distinguished through the outline of the calyx, or when there is marked irregularity or dilatation of the calyx corresponding to the position of the stone in the original plate.

Stones in the cortex may be diagnosed with a fair degree of accuracy. The shadows are generally situated, according to Braasch,[4] at or near the end of a calyx, rarely at its side, or they may overlap the calyx shadow. A shadow at a distance of 3 to 4 inches from the pelvic outline, unless in a greatly enlarged kidney, may be considered extrarenal.

Gall stones may closely simulate renal stone in symptomatology; they may occasionally cast shadows in the roentgenogram that resemble very much those of renal calculi in outline and position. Under these circumstances differentiation can be made by pyelography alone. Gall stone shadows show a dense periphery, and faint center and are usually circular in outline. A solitary gall stone shadow is uncommon. Should any doubt exist in the interpretation, a pyelogram will demonstrate that the shadows are of gall stones by their distance from that of the renal pelvis.

The data obtained by cystoscopy and ureteral catheterization vary considerably in their value. The bladder picture is often normal, and the slight changes that are encountered occasionally at the ureteral orifices cannot be considered characteristic. It is important to catheterize both ureters for the condition of the presumably normal kidney should always be ascertained before subjecting the patient to operation. To indicate the basic importance of this procedure it need only be stated that a complication may arise during the course of an operation for stone which may necessitate removal of the organ. The urines obtained by catheterization should be collected in sterile tubes and subjected to chemical, microscopical and bacteriological examination. The urine last obtained before removal of the catheters should be used for bacteriological tests. The importance of cultural examinations of the catheterized urines as a guide in determining the method of operative procedure has not been sufficiently emphasized. Beer[5] has called attention to this fact in a recent paper. With a sterile urine it may be considered safe to suture a nephrotomized kidney without drainage; an infected urine renders such an ideal procedure unsafe. Many kidneys have been sacrificed after nephrotomy because the significance of bacteria in the urine has not been appreciated.

The determination of the urea output of the segregated urines is of value; a normal urea volume on one side, with a considerably diminished excretion on the other side should be considered valuable corroborative evidence. For testing the functional capacity of the kidneys we rely almost exclusively on indigo carmine, taking into consideration the time of appearance, and the intensity of the color. The diseased side will generally show a diminished functional activity. The degree of this diminution will depend to a certain extent upon the destruction resulting from the calculus. The renal reflex, however, plays such an important rôle, that frequently it will be found that the diminution in the excretion of the dye will be considerably greater than can be accounted for by renal destruction. In aseptic cases with small stones, the changes may be so slight that there will be no appreciable secretory disturbance. In general, therefore, it may be said that the functional tests are not of great diagnostic value in renal calculus.

The question of the diagnosis of the small percentage of calculi which cannot be demonstrated roentgenographically is still unsettled. Kümmel[6] has recently proposed a method by means of which these uric acid calculi may at times be made visible. This consists in injecting an opaque silver salt into the renal pelvis, and subjecting the patient to another roentgen-ray examination the following day, after all the silver has been drained off. The theory is that the stone will become coated with silver, and thus be rendered visible. We have employed this method in a number of cases in which a calculus was suspected, and was not seen in the roentgenogram, but have not been able to verify the diagnosis thereby.

Ureteral calculus: In general it may be said that the diagnosis of this condition is more difficult than

that of renal calculus. The reason is, in part, the less clean-cut symptomatology, and the greater possibility of error in the interpretation of the findings of the special examinations. As a result very many ureteral calculi are overlooked. The condition most often confused with ureteral stone is appendicitis; when the latter is associated with hematuria the possibilities of error are considerable, unless all the special examinations are employed.

The remarks made upon urinalysis in cases of renal calculus apply with equal force in the diagnosis of ureteral stone. One point I wish to emphasize again, viz.: The absence of red blood cells, even in centrifugalized urine, does not prove the absence of ureteral calculus. Upon a number of occasions we have observed that even large stones may be imbedded in the ureter without producing microscopical bleeding.

Roentgenography in ureteral calculus offers more difficulties in interpretation than roentgenography in renal stone. A negative roentgenogram cannot exclude ureteral calculus with any of the certainty that we have seen applies to renal stone. Calculi in the lower ureter are especially apt to be overlooked in the roentgenogram; some observers believe that as large a proportion as 10 per cent. of stones in the ureter do not show roentgenographically. The difficulties are increased by the likelihood of misinterpreting the numerous extra-ureteral shadows that may appear along the course of the lower ureter. The correct interpretation of these shadows requires considerable experience, and very often it is impossible to make a positive diagnosis unless additional corroborative evidence is obtained. These shadows along the path of the ureter may be cast by phleboliths (calcareous infiltration of a thrombus), calcified lymph glands, or concretions in the appendix or intestine. Ureter calculi present certain characteristics in the roentgenogram; they are most frequently oval or elongated, the long axis of the shadow being directed downwards towards the bladder. When cystoscopy and the other methods to be described cannot be carried out, the diagnosis may at times be made by taking roentgenographs at intervals of several weeks, for it is well known that calculi are often passed spontaneously. The demonstration of the same shadow at different levels is conclusive proof of its intra-ureteral situation. Round shadows are always suspicious of phleboliths. The latter are generally multiple, and are most often grouped about the shadow of the ischial spine; calcareous glands also generally cast mutiple shadows, arranged in irregular groups along the spinal column, or at the brim of the true pelvis. Nevertheless it is not possible to formulate definite rules for the interpretation of these extra-ureteral shadows; a more specific method must be resorted to, and this we have at our command in the procedures to be described.

Cystoscopy and ureteral catheterization are therefore indispensable in the examination for ureteral stone. Here they are of greater value than in the diagnosis of renal calculus; indeed, the diagnosis can often be made from the cystoscopic examination alone. Meatoscopy, or the study of the ureteral orifices, is at times of considerable value. The calculus may be seen protruding from the meatus, or its tip may be visible. A stone imbedded in the lower ureter generally produces congestion, edema or prolapse of the mucous membrane of the ureteral orifice, changes that at times may simulate those seen in renal tuberculosis. Chromoureteroscopy, or the study of the ureteral orifices after the injection of indigo carmine, gives additional corroborative data. In complete obstruction, indigo carmine will not be seen coming from the diseased side, while on the normal side, a distinct blue jet is observed. If the stone partially blocks the ureter, a thin, weak, bluish stream, or just a mere trickle of faintly blue-tinged urine will be seen issuing from the ureter; a marked contrast to the picture observed on the normal side. In examining for stone it is of value to know that there are points of predilection for the obstruction of ureteral calculi. These are the uretero-pelvic junction; at the brim of the bony pelvis where the ureter crosses the iliac vessels, a distance of about 10 cm. from the ureteral orifice; and the intramural portion of the ureter, where the greater majority of stones are obstructed. The ureteral catheter will encounter distinct obstruction in about 75 per cent. of all ureteral stones. In most of the cases the obstruction may be overcome. Indeed it is often surprising to discover a catheter pass by a large stone that apparently blocked the ureter. Obstruction to the catheter, however, does not mean stone or stricture. In about 25 per cent. of the cases obstruction from physiological or anatomical peculiarities is encountered low down in the ureter. Obstruction higher up is of more significance, and is generally of a pathological nature. The average distance a ureteral catheter can be introduced is about 35 cm.; if no more than 27cm. can be inserted, an obstruction is probably present. The passage of a catheter beyond the calculus is often followed by a profuse flow of highly colored, clear, or cloudy urine, thus undoubtedly demonstrating intra-ure-

teral obstruction, with damming back of urine in the ureter and pelvis.

By means of the wax tipped catheter, suggested by Kelly, it may be possible to demonstrate that the obstruction is due to stone, but extreme care must be taken to avoid scratching the wax with the cystoscope. By means of the catheter we may determine the extent of a hydronephrosis caused by the calculus, by injecting a colored solution and measuring the amount before it appears alongside of the catheter, or produces pain in the kidney. By this distention test it can also be determined whether the colic produced by it is of the same nature as that causing the symptoms. The urines obtained by ureteral catheterization will give important information only when damage has been done to the kidney by the back pressure in the ureter and pelvis. The urea excretion is lower on the diseased side as a rule. The chemical tests (either indigo-carmine or phenolsulphonephthalein) will demonstrate diminished renal function only when destruction of renal tissue, pelvic dilatation or infection has taken place. However, when the calculi are small and do not produce obstructive symptoms, there will be no diminution in functional activity; and since the difficulties in the diagnosis of ureteral calculus are found in the small stones casting a doubtful shadow, it is evident that these tests are of diagnostic value in but a limited proportion of the cases.

A certain proportion of obscure cases will require still more corroborative data to establish a definite diagnosis. They are those in which there is no shadow in the roentgen-ray picture, but an obstruction to the ureter catheter is present, and the urinary findings are suspicious of calculus; or those in which the roentgenogram suggests a ureteral calculus, but the catheter does not encounter an obstruction and the urinary findings are negative. The methods in use to determine whether a shadow is intra- or extra-ureteral are as follows: Stereoscopy, the shadowgraph catheter and ureterography. Stereoscopy requires considerable experience on the part of the roentgenographer, necessitates special apparatus, and is not as reliable as the other methods; it is of more value when combined with the use of the shadowgraph catheter. The shadowgraph catheter is at times misleading, for it may be obstructed at a point opposite the shadow, and still be on a different plane. A stone in a diverticulum, or considerably dilated ureter, may be a centimeter from the catheter and may therefore appear, roentgenographically, to be extra-ureteral. The method we have found most reliable is the injection of one of the opaque silver salts into the ureter, followed immediately by roentgenography. The technic of injection is similar to that employed in pyelography, except that it is unnecessary to inject more than 3-4 c.c. of silver. The procedure may therefore be regarded as free from any danger. The roentgenogram will almost invariably demonstrate one of the following changes caused by either mechanical obstruction or inflammation: 1st. Dilatation of the ureter at the site of or above the obstruction. It may be slight and confined to the portion of the ureter around the calculus; or 2. The dilatation may be diffuse, involving the entire course of the ureter above the obstruction. 3. The absence of silver above the roentgen-ray shadow combined with its presence below, may be considered absolute proof of intra-ureteral obstruction. At times the ureterogram will demonstrate a sacculation, or angulation of the ureter, at the site of the calculus. Should none of the changes above enumerated be shown in the roentgenograph, a shadow even in direct line with that of the injected ureter may be regarded as of extra-ureteral origin.

Vesical calculus: I wish to call attention to the fact that roentgenography in this condition is not nearly as valuable an aid as in lithiasis of the upper urinary tract. Only a positive finding is of value; a negative one does not by any means exclude the presence of a calculus. This points was recently emphasized by Beer, who reported a series of twenty-two cases of vesical calculi, in only six of which did the calculus show in the roentgenogram. These roentgenograms were taken by a competent roentgenographer in the routine fashion after thorough catharsis. All of the stones were demonstrated cystoscopically, so that in vesical calculus this should be considered as our most valuable diagnostic procedure.

There are two methods that may be used as an aid in demonstrating a shadow where none existed before. One is the roentgenogram of the air-inflated bladder; the other, the coating of the calculus with one of the opaque silver salts previously described. When cystoscopy cannot be performed and stone is suspected, it would be advisable to try one or both of these methods.

The methods of examination for urinary lithiasis above described may appear too detailed, complicated and time-consuming, but it is my firm conviction that at the present time, several or all of the procedures are often necessary to establish the diagnosis of stone in the urinary tract and that to disregard them means to subject many patients to unfortunate exploratory operations at which nothing is found.

Renal tuberculosis: The frequent occurrence of this disease is considerably underestimated by many

general practitioners. In a large number of cases it is not recognized until its later stages complicated by marked bladder involvment, are already reached. The cases applying for hospital treatment are generally well advanced, the symptoms having extended in many instances over a few years. A fairly large percentage that have come under our observation were considered inoperable by reason of involvment of the other kidney, or extension to other organs, as epididymis, prostate and seminal vesicles. Early in the course of the disease the condition is very apt to be overlooked, and to be treated as cystitis, "irritable bladder," or pyelitis. The most prominent subjective symptom, and generally the earliest, is irritability of the bladder. This is present in from 85 per cent. to 90 per cent. of all cases. This symptom associated with an acid urine containing pus, which, with an ordinary stain, shows an absence of bacteria is most suggestive of urinary tuberculosis. The methods at our disposal for establishing the diagnosis of urinary tuberculosis are: Physical examination, urinalysis, guinea pig inoculation, cystoscopy with ureteral catheterization, excision of specimens from the bladder wall with the operating cystoscope, roentgenography, pyelography, tuberculin injections, and finally, exploratory exposure of the kidneys and ureters.

Physical examinations: The presence of nodules in the epididymis, prostate or vesicles when gonorrhea can be excluded, should be regarded as evidence pointing towards tuberculosis. These organs are affected in over 60 per cent. of the cases of renal tuberculosis.

Urinalysis: It is important to know that tuberculosis may be present without the occurrence of albuminuria. Miscroscopical pus is always present, even in very early cases. Unless a secondary infection supervenes the urine is acid in reaction, and generally shows no bacteria (other than the tubercle bacillus) in smears or in culture. The absolute diagnosis of urinary tuberculosis rests upon the demonstration of the tubercle bacillus. The latter can be demonstrated in smears in about 75 per cent. of the cases. For this purpose it is important to utilize 24-hour specimens, using the sediment obtained by standing or centrifugalizing. It is claimed that a somewhat higher percentage of positive results may be obtained if antiformin is employed. The differentiation of tubercle bacilli from smegna bacilli by smears is often impossible, and in every doubtful case the urine should be inoculated into guinea pigs. Even if severe smears are negative, recourse should be had to guinea pig inoculation if tuberculosis is suspected. The disadvantage of this method is the time consumed—four to six weeks before a diagnosis can be established. By using the Bloch technic,[6] however, this period can be considerably shortened. The method consists in injecting the centrifugalized 24-hour sediment subcutaneously below the inguinal lymphatic glands of a guinea pig, having previously traumatized these glands by manipulation. The guinea pig is killed in 10-14 days, and the inguinal nodes removed, macerated, and stained for tubercle bacilli. Used in conjunction with antiformin the method is still more reliable.

Cystoscopy: Combined with ureteral catheterization will afford information only second in value to the demonstration of the tubercle bacillus, in the diagnosis of the disease, and is of greatest value in its localization. An experienced cystoscopist can usually recognize renal tuberculosis even in its early stages. In extremely early cases, those which show no bladder or ureteral lesions, cystoscopy alone may not be of material aid, and catheterization must then be practiced. In the majority of cases, the vesicle lesions are most marked around the ureteral orifice on the side of the diseased kidney; occasionally, however, the lesions will group themselves around the orifice of the healthy side. The changes in the ureteral orifices may vary from simple congestion and bullous edema, to ulceration, infiltration and retraction, causing the so-called "golf-hole ureter." At a still later stage more of the bladder wall is involved; finally the tuberculous cystitis becomes more widespread and involves the whole bladder.

Chromoureteroscopy is of considerable value, first as an aid in finding the ureters in an inflamed bladder, and second, for cases in which ureteral stricture renders catheterization impossible. Ureteral catheterization should be performed whenever possible, and the segregated urines examined, chemically, microscopically and bacteriologically. The functional kidney tests when properly interpreted are of value. We rely almost exclusively on indigocarmine. The excision of a portion of the diseased mucosa of the bladder as suggested by Buerger,[8] especially that at the ureteral orifices, and its examination for tubercle bacilli, and for the microscopical picture of tuberculosis in stained sections may be of value in obscure cases.

Roentgenography: Early renal tuberculosis can rarely be diagnosed by this method. In the later stages, when caseation has taken place, the calcium deposits then present will occasionally cast shadows on the plate. These, as described by Braasch, may be of three types: 1. The cast of the case-

ated kidney, entirely or in part. 2. Single irregular shadows of varying size. 3. Multiple small irregular shadows scattered over the kidney area. The shadows cast by tuberculosis foci are usually more irregular in outline and hazier than stone shadows. Nevertheless the differential diagnosis from calculus will at times be difficult to make unless all the other data are taken into consideration.

Pyelography: Is seldom indicated in the diagnosis of renal tuberculosis. In fact we have not had occasion to resort to this measure in a single instance.

Tuberculin injections: This greatly neglected method is at times of considerable value as a diagnostic aid. Beer[9] in a recent publication has called attention to its value in the diagnosis of obscure cases of renal tuberculosis. We do not employ the method as a routine, but in selected cases where other means have failed to establish the diagnosis. Old tuberculin is used so diluted that 5 minims equal ½ mgm. It is advisable to first make a Von Pirquet test, as a guide to the initial dose. Tuberculin injections are given only in non-febrile cases after the temperature has been taken regularly for a few days. The initial dose is ½ milligramme, gradually increased every few days if there is no reaction, with smaller doses. The maximum dose is 5 milligrammes. A positive reaction consists of at least two groups of symptoms. 1. There must be a general febrile reaction; and 2. A local reaction at the site of the tuberculous process, indicated by pain or tenderness. In some cases there may be a marked increase of tubercle bacilli in the urine. A combined general and focal response is almost invariably due to focal tuberculosis and such a response locates the diseased side. "A general minus a focal response is of no practical value as the most careful examination cannot exclude tuberculosis in other parts which may give the general reaction." (Beer.) Finally, when it is impossible by any of the foregoing methods to diagnosticate and localize the condition, or to determine whether the disease is unilateral or bilateral, exploratory lumbar exposure of both kidneys is indicated. The supposedly healthy kidney and ureter are first exposed, delivered into the wound and examined. The kidney may occasionally be normal in size and appearance, but if tuberculosis is present the ureter will generally be found thickened and infiltrated. If found normal the opposite kidney is explored.

With a proper application of the above mentioned procedures it should be possible to diagnosticate accurately, practically every case of urinary tuberculosis.

I have concerned myself chiefly with urinary lithiasis and tuberculosis, because these conditions are of greatest frequency and importance in the affections of the urinary tract. Before concluding I would like to call attention to a few diagnostic measures employed in various vesical conditions. Tumors of the bladder can be diagnosticated positively only by cystoscopic examination, but the differentiation between benign and malignant growths can be determined with certainty only by the examination of specimens removed from the tumor. Specimens may be obtained in one of three ways: by carefully examining the bladder washings for pieces of tumor tissue; by exercising sections with the cystoscopic punch forceps or rongeur; or by examination of the pieces detached after the application of the high frequency spark. The cystoscopic punch forceps will also be of service for obtaining specimens of other bladder lesions, e. g., ulcer, tubercle, etc.

Diverticula of the bladder may be recognized cystoscopically, but a correct estimation of their size may be obtained only by roentgenographs of the silver filled sac. Occasionally vesical conditions are encountered in which cystoscopy cannot be performed. In such cases the differential diagnosis between prostatic enlargement, stone and tumor may be very difficult or even impossible by the ordinary technic of examination. It is in this group of cases that roentgenography of the air-inflated bladder, a method to which I have elsewhere called attention, is often of considerable value. A medium of air intensifies the roentgen-rays, rendering masses clearly visible which in another medium may be indistinguishable. The technic is simple; a small sized rubber catheter is introduced into the bladder, the organ emptied, and the inflation apparatus (an ordinary hand bulb) attached. The bladder is slowly and gently inflated until the patient describes a sense of fulness. The roentgenogram is then taken with slight pressure of the compression diaphragm. Intravesical prostatic enlargement, or the outlines of a tumor are distinctly shown. A calculus not visible in the ordinary roentgenogram will occasionally be well outlined in the inflated bladder roentgenogram.

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BONE AND JOINT SYPHILIS.*

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The total number of cases of syphilitic affections of the bones and joints may not be as large as those in some of the other classifications or divisions, but they are common, and quite often the diagnosis is extremely difficult and can be made only by a blood test or by the result of specific treatment.

Syphilitic bone and joint lesions belong almost exclusively to the tertiary period. There are, occasionally, in the secondary stage bone pains which are worse at night. There also may be serous synovitis, which is very similar in character to the infectious arthritis from other than the spirochaete, and follows much the same course. With refined methods of diagnosis, it is quite possible that these bone and joint pains of the secondary stage may be found to be much more common than we have thought in the past.

The tertiary period, however, furnishes most of the cases. In the bones we find local periostitis, osteitis, and osteomyelitis; in the joints gummatous synovitis and chondro-arthritis.

Local periostitis produces nodes, and gives to the tibia its roughened, beady feel. This condition is so common that it is a part of the routine examination in all cases of suspected hereditary or late acquired syphilis.

Gummatous osteitis may be either localized or diffuse. If it is localized it is possible to so weaken the bone that a spontaneous fracture may occur.

More frequently a syphilitic osteitis takes the form of a diffuse sclerosis and the cortex becomes much thicker and denser than the normal, and frequently produces bowing of the bone by general enlargement in length as well as thickness of one side. This is frequently seen in the tibia:—marked anterior bowing of the leg. Other bones may be affected, the forearm probably being second in frequency.

In this type of sclerosing osteitis the roentgenogram shows a bone picture not seen in other forms of osteitis and the diagnosis can be made by roentgenography alone.

The importance of a roentgenographic study in suspected syphilitic osteitis can hardly be overestimated. In practically all cases, even when the clinical symptoms may be misleading, a properly made roentgenogram and a correct interpretation of the lights and shadows there shown will give a nearly, if not quite, positive diagnosis.

In the adult the differential diagnosis between syphilitic and non-syphilitic osteitis from the roentgenogram findings alone is somewhat easier than in early childhood. Some of the non-specific lesions of the adult that may cause doubt are chronic infectious osteomyelitis, tuberculosis, sarcoma, carcinoma, osteitis deformans, chondroma, and bone cysts.

A description in detail of differential roentgenogram findings would not be of general interest, but a few of the gross differences may deserve mention:

In chronic ostemyelitis the processes of destruction and repair are going on in the same area. The roentgenogram shows thickened new bone, which is irregular in outline and may contain areas of markedly lessened density, so that the picture is one of irregular bone formation.

Tuberculosis is essentially a destructive process, and rarely attacks the shaft. There is involvement of soft tissues surrounding the bone, a general hazy appearance of the roentgenographic picture, and loss of bone detail.

Sarcoma, especially the periosteal type, may present some difficulties in roentgenogram diagnosis, but the tendency to bone destruction, the localization, and the presenting clinical symptoms usually make diagnosis easy.

Carcinoma is usually secondary to involvement of soft tissues elsewhere. It is essentially a destructive process; and more often involves the ends of long bones; the roentgenographic appearance is somewhat similar to that found in Charcot joints, but the clinical symptoms are markedly different.

Osteitis deformans shows bone changes similar to syphilis in that there is thickened cortex, and bowing of bone. The roentgenogram difference is that the entire shaft is involved in osteitis deformans and there is a bone striation quite different from the syphilitic bone. There will also be found more general bone involvement than in syphilis.

Bone cysts are infrequent; they usually do not present symptoms unless there has been an injury and the roentgenogram appearance is similar to that of giant cell sarcoma involving the medulla.

In adult life chondromata should present no difficulties to the roentgenogram diagnostician; in early childhood the cartilaginous involvement of the bones in the region of an epiphysis may be misleading, and it may be that a positive diagnosis can be made only by association of roentgenogram and other laboratory and clinical findings. If we bear

* Read before the Syracuse Academy of Medicine, March 2, 1915.

in mind that syphilitic osteo-chondritis usually affects the shaft and not the epiphyseal cartilage or epiphysis, we have one important fact.

I do not wish to be understood as thinking or advising diagnosis by roentgenogram alone in any suspected case because, however valuable may be the roentgenogram findings, they are only a part of our means of study and should always be used in conjunction with and to corroborate other methods. In this paper I am only trying to emphasize the importance of roentgenography and to show its value.

Gumma formation, when it occurs in a bone already afflicted with a sclerosing osteitis, is extremely painful, particularly at night.

Gummatous infiltration of the bone may go on to necrosis and suppuration, and when evacuated through the skin the characteristic ulcer is usual.

Sclerosing osteitis rarely suppurates, unless there has been injury, or the physical condition is bad, or too much mercury has been administered.

Osteomyelitis with destruction of tissue is frequent in the spongy bones and in the bones of the head and face. The frequently seen "saddle-nose" is a common example.

Nodes may form on the skull and go on to destruction and perforation.

The clinical evidence found in syphilitic joints is not so positive as in involvement of bone, and it is easy to make an incorrect diagnosis. The disease is chronic and closely resembles tuberculosis, and a careful study which includes a Wassermann test is essential. The roentgenograph is not often of diagnostic value. The following case will illustrate some of the difficulties in the way of making a diagnosis:—

Boy, aged 15. History of always being fairly well, although not physically strong and robust. Five children in family,—two older and two younger. Father and mother both living and well.

Blood examination on admission to Women's & Children's Hospital, Jan. 16, 1915, showed 4,500,000 red cells, 8,200 white cells, and 65% hemoglobin. His present trouble with knees dated from about August 1, 1914. Three weeks previous to this time he had been doing some work that required him to be on his knees each day. The right knee became sore and stiff and soon the left knee became similarly affected; some swelling and a lot of soreness and pain; knees soon became flexed and rigid. Until September 1st, he kept up and around and took rheumatism medicine. Early in September both knees were put in plaster in the semi-flexed position and he was kept in bed. Early in November he was taken to a hospital, casts were removed; roentgenogram studies made, a diagnosis of tuberculosis given; Buck's extension applied, and when the knees became straight they were again encased in plaster and the patient returned to his home. These casts were left on until a week before his admission to the Women's & Children's Hospital. There were local symptoms, aside from the fact that tuberculosis rarely, if ever, affects both knees, that made me believe that the case was non-tuberculous and the report from a Wassermann examination was "4 plus." Dr. Wynkoop took charge of the medical treatment and the patient made a rapid recovery, and, in spite of the fact that these knees were immobilized for several months, he now walks about in quite a painless and normal manner. He can flex the left knee to nearly the normal limit and the right considerably beyond the right angle, and fully extend both legs. His anemia has also improved.

The majority of the cases of bone and joint syphilis that I see are of the hereditary type, and in hospital practice it is my routine to have a Wassermann test made in all early cases of joint trouble. I am forced to believe that not all cases of joint syphilis are bilateral; that we may have, and often do have, unilateral trouble, and that many of our former cases were syphilitic rather than tuberculous, and that had iodides and mercury been given long immobilization might have been avoided.

The Charcot joints, being the result of nerve degeneration, can hardly be classed as disease of the bone and joints, but the destruction of bone and joint structures is so markedly out of proportion to the pain and loss of function that each case is an interesting study. A man I saw with Dr. Buettner, paralyzed below the waist, in attempting to lift himself on his hands and arms, felt his elbow give way. He readily consented to show what happened. The olecranon ascended on the back of the humerus about one-third of the length of the latter. I pulled it down into position and he repeated the process several times, apparently entirely free from pain.

I recently saw a bilateral Charcot hip involvement in a woman who was able to walk with a cane and yet the roentgenogram showed complete destruction of the head and neck of each femur and weight was borne by the great trochanter pushed well up into the muscles near the crest of the ilium.

This affection is most common in the knees, and in any joint presents quite definite roentgenogram findings.

The diagnosis in bone and joint syphilis is difficult. With all our laboratory methods, including the roentgenogram, the diagnosis is frequently not possible until the effect of treatment can be observed.

I believe that many hips, knees, and other joints have been treated as tuberculous that in reality were syphilitic.

GUMMATOUS ULCERATIONS OF THE BLADDER—A CASE REPORT.*

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M. M., male, silk importer, 46 years old, American, married, has two children—a boy of 8 years and a girl of 6; both apparently healthy.

He contracted a chancre in 1897, for which he was treated for about two years and discharged as cured. In January, 1912, a rash appeared on the chest and hands and the family physician promptly diagnosed it as syphilis. Wasserman reaction then strongly positive. He received five intravenous injections of 0.6 salvarsan; the rash disappeared and the Wassermann reaction was repeatedly negative.

The patient was brought to me for cystoscopic examination September 12, 1914, with the following history: About four or five months before, he began to experience pain about the pubes, which was quite severe at times, and shortly afterwards he began to have frequent desire to urinate, as often as every 15 to 20 minutes, with no trouble at night, however. The urine was very thick, ill-smelling and cloudy. The doctor treated him for cystitis with bladder irrigations and urinary antiseptics internally, without any results. About a week before I saw him the patient began to suffer from frequency at night also and tenesmus. The man was very anemic. He had lost about 30 pounds in the last 5 months. The urine contained pus and bladder epithelia, but was otherwise negative. There were about 12 ounces of thick, bad-smelling residual urine. Rectal examination of prostate and seminal vesicles negative.

Cystoscopic examination: Bladder slightly congested, very trabeculated; ureteral openings normal; trigonum very congested. A circular, ulcerated patch with infiltrated edges and ragged base, with necrotic tissue the size of quarter dollar on the left side below the ureter; another, similar, but smaller, ulceration a little to the right of this one, and a white hard glistening tumor covered by mucous membrane a little away from the left ureteral opening.

I made a diagnosis of syphilitic ulcerations and hard gumma of the bladder, and took blood for a Wassermann test, which proved negative. In spite of this I gave the patient an intravenous injection of 0.6 salvarsan, and a week later had another Wassermann test made, which proved strongly positive.

Treatment: By air inflation of the bladder and through an operating cystoscope, I cleared away all the detritus from the ulcerations by currette and applied a 25 per cent. solution of silver nitrate to the ulcerations, tying a catheter in the bladder for 10 days, changing the catheter every 24 hours and irrigating the bladder with 1-5,000 iodine solution daily. Intramuscular injections of salicylate of mercury twice a week and inunctions of mercury every day; in two weeks I stopped the mercury on account of salivation, and I ordered potassium iodide 10 grains three times a day, increased to 50 grains a day.

The frequency and tenesmus stopped when I removed the permanent catheter and the urine cleared up at the end of the fourth week.

October 16: Cystoscopic examination shows normal mucous membrane except for the trabeculations; no ulcerations nor tumor found. The patient has gained about 8 pounds.

October 20: Wassermann test negative. Only mixed treatment given internally.

November 16: Wassermann test negative. All treatment stopped. The patient feels in perfect health, voids clear urine 3 or 4 times a day, none at night. He has gained about 15 pounds.

The points of interest in this case are:

1. The long delayed appearance of syphilitic ulcerations in the bladder after the initial lesion.

2. The negative Wassermann reaction turning to positive after an intravenous injection of salvarsan.

3. The quick response to antisyphilitc treatment.

1847 MADISON AVENUE.

* Read before the American Urological Association, New York Society, April 7th, 1915.

RECURRENT DISLOCATIONS OF THE SHOULDER.

If after the reduction of a dislocation of the shoulder, the arm is not kept at the side and is soon carried forcibly into abduction, particularly if external rotation is added, the humeral head is easily pried out of the socket again because the capsule has not had time to heal. Its torn edges are again forced apart and the repetition of this accident will leave them permanently separated by the width of the gap necessary for a dislocation, the gap becoming filled in by new cicatricial capsule, much as the gap in a divided Achilles tendon is filled in. The lengthened axillary portion of the capsule will not now contract and a recurrent dislocation is established. Shortening by overlapping or folding of the lengthened capsule is indicated.—T. TURNER THOMAS in the *J. A. M. A.*

THE OPERATIVE TREATMENT OF FRACTURES.*

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The treatment of fractures by means of making an incision, wiring, adjusting the misplaced bones, introducing screws, pins, plates, bone-dowels, etc., may be briefly stated.

In the first place, I am unalterably opposed to opening any fracture when the fragments can be properly reduced and held in opposition by any other measure. If for no other reason, the ever-

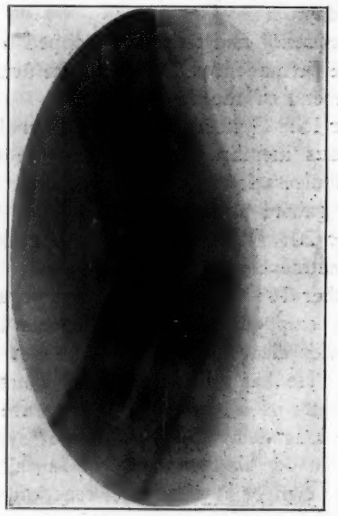

Plate I.—C. C. Sams—Radius and ulna, united fracture.

present danger of infection, no matter how perfect one's technic, positively contraindicates such procedure.

Bone is peculiarly vulnerable to pathogenic bacteria, and once infected is slow to rid itself of the enemy. The peritoneum is far more resistent to infection than is bone.

On the other hand, a fracture that is not amenable to non-operative measures, should be exposed and dealt with according to the indications.

Another consideration worthy of mention in this connection is the time the patient is confined to bed. For instance, the treatment of fracture of the shaft of the femur by means of Buck's extension requires the patient to remain in bed many weeks. Even the plaster of paris bandage method confines the patient unduly long. The operative method properly done puts the patient on his crutches within ten or fifteen days, thereby adding much to his comfort and hastening the process of repair (Bier).

In operating on fractures the only safe plan is never to touch the wound even with the gloved finger, nor to touch anything that goes into the

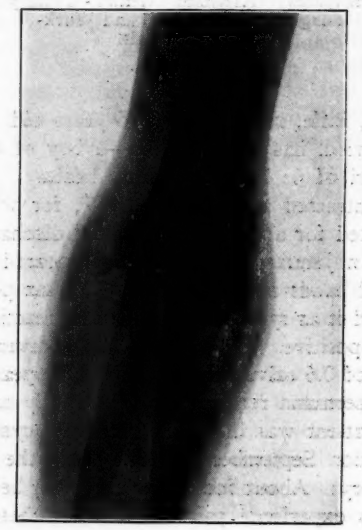

Plate II.—A. M. F.—Excision of elbow by circular saw. Two years after injury.

wound. This refinement of technic is easy enough when once acquired. Neither we nor our nurses touch the wound, or the sponge, or the end of the instrument that goes into the wound, or a needle,

Plate III.—C. L. M.—Femur, fracture with vicious union. Four weeks after injury.

or the suture material. The sutures are tied with forceps, without any handling whatever. In the last case of fractured femur I operated upon I was

* Read before the Southern Medical Association, November 11, 1914, and the Guilford County Medical Society, February 4, 1915.

able to separate the planes of muscles without cutting a single muscle fiber or tying a bloodvessel or touching anything that went into the wound. The result was union by first intention and the patient up on his crutches on the twelfth day.

Plate IV.—C. L. M.—Femur, fracture, plated. Twenty days after operation.

I was surprised to see how quickly the instrument nurse acquires the necessary dexterity to do the so-called touchless operations, and further to note

Plate V.—William A.—Ununited fracture, femur, six months' standing, resected, sutured with silver wire. Picture taken 21 years after operation.

that the nurse will use this technic in other cases not having been told to do so. The very best practise along this line is gained by doing dog surgery.

The results of the touchless method are no infection, prompt union, and early return of function.

To have to remove a wire or plate usually means that the case was infected. I have removed but one plate and that was in a fractured radius which was

Plate VI.—Ernest W.—Radius and ulna, ununited fracture. Twenty-three months after operation.

infected before operation. Moreover, in this instance, union was perfect and the plate was no longer needed.

The first cut shows an old ununited fracture of

Plate VII.—Mack F.—Right radius and ulna, fracture. Sixteen days after injury.

the radius and ulna. I operated, a number of years ago, by the old method, handling the parts after the common manner; results—infection and non-union.

I know better now. Under the present methods I expect no infection and get none. I close a bone operation wound with all the confidence I do a simple clean appendicectomy incision.

The second cut shows an elbow accidentally re-

Plate VIII.—Mack Floyd.—Right radius and ulna, fracture. Forty-five days after trauma, twenty days after operation.

sected by a circular saw. All the bones were cut off by the saw about two inches from the joint. Strange to say, the wound was not infected. I wisely refrained from touching the wound, simply painting it with iodine and applying a supporting

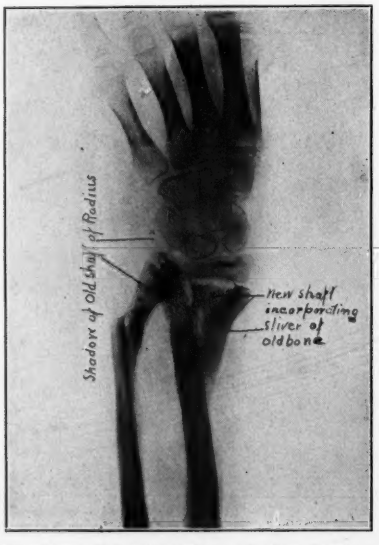

Plate IX.—Mack F.—Left radius and ulna, fracture. Seventy days after injury. Day before operation.

splint and sterile dressing. There is no bony union, although the picture would seem to indicate it. The man has a useful flail arm.

Plate 3 shows a beautiful case of ununited fractured femur with vicious union, the picture taken four weeks after injury. Plate 4, of the same case, was taken twenty days after operation. The results attained were ideal.

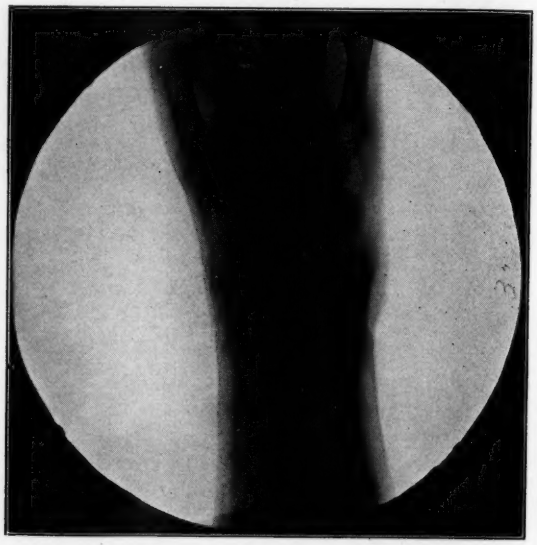

Plate X.—Mack Floyd.—Left arm. Three months after operation.

I think I may be justly proud of the next case (5). This man's broken femur was ununited for more than five months. Twenty-one years ago I went to his home off in the woods and, with the

Plate XI.—Walter McC.—Femur, fracture of neck, nailed. Two years and one month after operation.

assistance of a number of excellent general practitioners, excised an inch and a quarter of the bone and wired the fragments together. The results were

primary union with perfect function. The skiagram taken three weeks ago shows the silver wire still *in situ*.

I have had such gratifying results with the operative treatment of fractured femur that I have come to welcome these cases to my clinic.

Figure 6 illustrates the results following operation in a case of fractured radius and ulna with vicious union. I chiseled the fragments apart, put a plate on the radius, secured primary union and most perfect results. This picture was taken two years after the operation.

The Figs. 7 to 10 show the several steps in infected compound comminuted fracture of both fore-

Plate XII.—Walter McC.—Right femur, fracture of neck. Two years and one month after operation.

arms. The boy fell fifty-five feet down an elevator shaft. He was brought into the hospital the next day highly septic, with temperature 103°, white blood cells 19,000. Of course, no operative procedure could be undertaken with a patient in this condition. The first picture (Fig. 7) shows the condition of the right arm. The left arm was in essentially the same condition. Note the dislocation of the radial epiphysis, and the fracture of the ulna. At operation three weeks later the epiphysis was placed back on the end of the shaft, just like putting a cap on a boy's head, but it would not stay. I then introduced a wire which also failed to hold the fragments together. A Lane plate applied, as seen in Fig. 8, kept them in perfect apposition. After ten weeks, the plate being no longer needed, it was removed, because a tiny bit of suppuration continued.

Figure 9 shows the left arm, a counterpart of its fellow. In this instance the infection was so severe that I did not dare to operate before the seventy-first day. In the meantime nature had made a new shaft extending from the epiphysis to the side of the original shaft, and had absorbed the projecting portion of the shaft from the point where the new and the old joined. Now here is a peculiar thing: One sees the old end of the shaft in the picture, but when I opened the arm it was not there, it had been absorbed, to build the new portion with, let us suppose.

What I did was to fracture the shaft with a chisel at the junction of the old and new portions and bring them into line. It was necessary to refracture the ulna, excise a bit of the ends, and suture with catgut. Fig. 10 shows the condition of the bones three months after operation. To have secured useful arms and hands in this case is very gratifying.

Figure 11 shows an ununited fracture of the neck of the femur of four weeks standing. Following the method of Murphy, I made a U-shaped incision, sawed the great trochanter off, replaced the fractured neck, nailed it with ordinary wire nails, then nailed the trochanter back in place. Fig. 12, a picture taken two years after the accident, shows that the patient has a perfectly normal limb; indeed, unless one should see the scar, it could not be told which hip had been broken.

Radiography in Ulcer.

It is well to state that in uncomplicated gastric ulcer, the *x*-ray evidences as shown by the plate method are largely accidental. By uncomplicated ulcer I mean ulcer in which pyloric stenosis has not occurred, where types of hour-glass contraction have not taken place, where malformation of the stomach outline by excess of scar tissue has not ensued, where perforation is absent or crater ulcer does not exist. When it is recalled that the *x*-ray plate in gastric work is but a silhouette of the bismuth filled stomach at one instant of its exposure, it is readily seen why *x*-ray plates do not locate all ulcers. Further, when we realize that less than 60 per cent. of chronic gastric ulcers are of the complicated type, it is not difficult to appreciate that many ulcers must escape recognition in the *x*-ray plate. The most important evidence returned by the *x*-ray plate is the demonstration of various types of stenosis, the indication of the size of the stomach, differentiation between a simple ulcer and a gross carcinoma, and the relation of the stomach to adjacent viscera.—Frank Smithies, in *Interstate Medical Journal.*

AMPUTATION FOR FRACTURE OF THE FEMUR IN THE AGED.

GOETHE LINK, M.D.,
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Fractures of the femur in those past sixty are very common accidents, those of the neck of the bone alone comprising one-third of all fractures occurring at this period of life.

It is well known that the mortality in femur fractures in the aged is high, though statistics covering this class of cases are not available, all ages being included in most lists. That there is good reason for considering them separately is shown by Walker's 112 cases (*Annals of Surgery,* vol. 47, p. 84), 55 of which occurred under sixty years of age with a mortality within six months of less than 4 per cent., while the remaining 57 cases, over sixty years, sustained a mortality of over 28 per cent. within six months.

The disability remaining in those who do not die is frequently so severe that death would be a welcome substitute. Even among those younger and able to work, this disability amounts to 50 per cent. of the earning capacity in 38 per cent. of all cases of femur fracture (Harris, quoted by Walker, *American Journal of Surgery,* vol. XXVIII, p. 450). The average period of disability in those recovering, of all ages, is given by Von Bergmann as more than one year. In the old individual this period becomes much longer and constitutes a fair part of the expectancy of life.

Whether open operation would be advisable after sixty, or whether it would improve results, remains to be seen. Plating fractures of the femur in the aged no doubt entails all the intrinsic disadvantages of that method and many others due to age and its incidents. At the present time open operation properly done is out of reach of the multitude.

It is upon these theoretical considerations that I wish to suggest amputation through the site of fracture in those past sixty where union and recovery seem unlikely. I have had only one opportunity to put it in practice.

For obvious reasons, it is not possible to give the mortality of thigh amputation in such cases. It is our opinion that it would be much less than the 28 per cent. which has been shown to result from the ordinary treatment. We might expect better results than in the conditions which have usually demanded amputation in the aged, such as gangrene, sarcoma, etc. Those most active and best able to recover from amputation because of the activity, are most apt to suffer an accident and fracture.

That recovery from thigh amputation occurs quickly, makes it a measure of especial value for the aged. Instead of a long painful confinement in bed, the patient may be placed in a chair comfortably within three or four days, and within a week or two can use crutches with aid. Recovery from the amputation having occurred, the patient is able to enjoy life far more with one good leg and crutches than if encumbered with a useless, painful, broken thigh. It seems, therefore, that we would be warranted in amputating every case of unimpacted fracture of the femur in those over sixty years of age. Fractures of the neck especially would justify such action as they seldom recover. In order to be properly conservative, however, let us advocate amputation in those cases where, after a reasonable lapse of time, the physician sees that his patient is going to die if longer confined by his broken thigh.

One advantage of this procedure is its general usefulness. There are few communities that cannot obtain the services of a surgeon able to do a thigh amputation, and it can be done if necessary in the most humble cottage.

Amputation through the point of fracture should usually be employed. Preference should be given to a type of operation which places the wound on the outer side most removed from soiling with natural passages so apt to occur in the aged. Spinal anesthesia I have found ideal in amputation of the thigh in old persons, having used it in conditions other than fracture.

The following case is reported in support of these suggestions:

I was asked by Dr. A. A. Kramer to come to Butler, Indiana, prepared to perform a thigh amputation. Upon arriving, I found a man aged seventy-three, owner and manager of a large farm, who had been kicked by a horse twelve weeks previously and had sustained a fracture of the femur slightly below the trochanter major. Since the injury he had been flat in bed suffering intensely and could hardly be moved sufficiently to be kept clean. The leg and thigh were covered with ulcers and opened abscesses. The patient had been in Dr. Kramer's care only a few days.

Attempts to turn the patient over so we could use spinal anesthesia caused so much pain that we desisted and gave ether. Amputation was done through the fracture with a long internal flap. As one of the abscesses could not be avoided, the wound was drained. The upper fragment of femur was found covered with muscular tissue which had grown fast. The lower fragment was smooth, and having been displaced backward, was impinging upon the great sciatic nerve, which was badly torn. No evidence of callus was seen.

On the fourth day after the operation the pa-

tient was placed in a chair. As it was summer time, he was taken out of doors each day where he spent most of his time while recuperating. He began using crutches two weeks after the amputation. He is now actively engaged managing his farm.

And credit for this idea is due Dr. Kramer, who planned the amputation of this man's useless extremity which was slowly causing his death.

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CHOLECYSTOSTOMY OR CHOLECYSTECTOMY IN GALL-BLADDER DISEASE, A REVIEW.*

W. C. GEWIN, M.D.,
BIRMINGHAM, ALA.

The mere diagnosis of gall-stones or gall-bladder infection is, in my opinion, sufficient to warrant an operation. While it is true that about ten per cent. of all people have gall-stones without symptoms, yet, when present they are a foreign body and are liable to cause alarming trouble at any time. Even if no acute condition arises, the mere presence of gall-stones is evidence of a pathological condition.

The pathology in gall-stone disease is much more simple in the early stages than it is later on, and when operated upon early the object sought may be attained with a much more simple and safe operation than when postponed until complications are present. Most of the mortality in gall-bladder surgery is due to unnecessary and ill-advised delay. Mayo[1] says that "Operations for simple gall-stone diseases are exceedingly safe. The operation of choice is cholecystostomy, which has but a small primary mortality, certainly not exceeding one-third of one per cent. from all causes; and the percentage of cures is very high, at least 95 per cent." With such a small mortality, and large per cent. of cures, and a knowledge of the frequency of complications incident to the presence of gall-stone disease, it certainly is not difficult to come to the conclusion that it is much safer to operate than not to operate in gall-stone disease, even though the patient suffers no serious inconvenience at the time operation is advised.

Cholecystitis being a predecessor of cholelithiasis, and cholelithiasis, when neglected until serious complications ensue, being attended with high operative mortality, I think Deaver is not far from right when he says that a low mortality rate obtained by a surgeon is a tribute to the knowledge and skill of his medical confrères, who sent him the cases. Most of the mortality in biliary surgery is due directly to delay. It follows that a diseased condition of the gall-bladder, or of the gall-bladder ducts, or the presence of stones in either of them is an indication for operative intervention. The question then arises, which is the best operation to do?

Notwithstanding the immense amount of literature that has been written on the surgical treatment of gall-bladder affections, I am inclined to believe that as yet no well-defined principles have been outlined which we can invariably follow in our management of these cases without occasionally falling into the path of error. It seems that the present trend is toward more cholecystectomies, and fewer cholecystostomies, and judging from the literature which I have had occasion to read, it appears to me that the once favored operation of cholecystostomy is losing some of its old and at one time most ardent advocates. Mayo[2] in 1908 said, "Cholecystostomy we consider the normal operation for gall-stone disease. It is indicated in all cases in which the gall-bladder is not seriously damaged, and in which the removal of calculi will leave the cystic duct free, so that there will be no further trouble from inefficient drainage. Many prefer to remove the gall-bladder in this particular type, claiming that it is nearly as easy an operation, and gives more satisfactory results. In our hands it has one-third of one per cent. higher mortality, without any compensating advantage. In over eighteen hundred operations upon the gall-bladder and bile passages, in twelve hundred of which the gall-bladder was not removed, there was but a single case in which stones reformed in the gall-bladder." Mayo[3] in 1914 rather suggests a change of mind when he is quoted as suggesting that "While cholecystostomy may be the proper method of operation in gall-stone disease, in which the gall-bladder is otherwise normal, and the ducts are open, it is not the method of choice, and is not satisfactory in cholecystitis." Louis Frank[4] of Louisville in 1912 said "Cholecystectomy is comparatively seldom indicated in the treatment of gall-bladder infection, although it constitutes an operation which has its legitimate field of usefulness. At the same time its contraindications and limitations must not be overlooked." In contrast to this statement Frank[5] recently makes the assertion "As a matter of fact cholecystectomy is now largely indicated in gall-stone disease, and it may be said that practically all cases of cholecystitis, and a large majority (probably 80 per cent.) of cases of gall-stone disease should be treated by cholecystectomy, rather than by cholecystostomy." D'Arcy Power[6] of London

* Read before the Medical Association of the State of Alabama, Birmingham, April 20, 1915.

in an article on gall-stones read before the Cardiff, Wales, Medical Society, in 1913, said "The exact operation performed does not seem to make a material difference to the result obtained. In my earlier cases the gall-bladder was usually opened, drained, and allowed to heal by granulation. The 'ideal' operation was performed occasionally, that is to say the gall-bladder was incised, the gall-stones were removed, and the gall-bladder was sutured at once without any drainage. This method has always seemed to me to be attended with some degree of risk, because the complete closure of an unhealthy gall-bladder may fail to occur, however satisfactory the line of suture may appear at the time of operation. When the abdomen is closed, the surgeon is left in ignorance of many serious post-operative complications, such as hemorrhage from, or leakage into, the gall-bladder, which may need immediate treatment to be effective. I have therefore abandoned the 'ideal' operation, except in the very simplest cases, and even in those I employ it with a certain degree of reluctance." Power further states that "In looking through the notes of the operations I find for the last two or three years I do more cholecystectomies than I did at first; that is to say, I have removed the fundus of the gall-bladder in most of the cases, ligaturing the neck, disinfecting the stump, and afterwards burying it by bringing the peritoneum over it on the same line as is usual in appendix operations." Frank[7] in 1914 further says "Cholecystectomy is directly in the fore-front at the present time, and its exact status has yet to be determined. Just what may be the preponderance of opinion, and what may become the final practice as to the disposition of the gall-bladder I would fear to say." Moynihan as early as 1902 advocated cholecystectomy as a routine procedure in cholelithiasis.

It is now generally believed that gall-stone formations is almost invariably preceded by an infection of the gall-bladder, or bile-ducts, or both; also, it is a well established surgical principle that where there is infection the first and most important measure is adequate drainage. This being true, I do not believe the so-called "ideal" operation can ever come into prominence in gall-bladder surgery. I think the risk assumed in closing an unhealthy gall-bladder, dropping it back in the abdominal cavity, and closing the abdominal incision, without any way whatsoever of determining the progress of repair is entirely out of proportion to the benefits, which one might hope to derive by such a method. Instead of gaining favor as our knowledge of gall-bladder surgery increases, in my opinion it will be relegated to that already large number of obsolete and unscientific operations.

As to the reformation of gall-stones after cholecystostomy, Maurice H. Richardson[8] said "Since my first operation on the gall-bladder in 1886 or thereabouts, I have never seen, so far as I can recollect, a single case of recurring stones—of stones formed once the gall-bladder had been thoroughly drained. It is unheard of in my experience to open a gall-bladder that has once been drained, and to find gall-stones of recent formation, i. e., gall-stones that are soft and bright colored. On the other hand it is not uncommon for me to remove a stone overlooked at the original operation, especially when the operation was performed by a man of small experience." Kehr states that he himself overlooked stones in 2.5 per cent. of 1,105 cases operated upon before 1909. There is no doubt that in most cases in which stones are found after cholecystostomy had been performed, they were left at the time of the primary operation. This is a point strongly in favor of cholecystostomy. On the other hand, cholecystectomy, as a secondary operation, is usually very difficult, owing to adhesions resulting from the primary operation. This is a point in favor of cholecystectomy as a primary operation.

After all, when it comes to a decision as to just what operation should be done in a case of gall-stones disease, I believe it largely a question of technical expediency in the given case, and that only mature surgical judgment can dictate what is best. There are, of course, various complications, such as malignancy, gangrene, empyema of the gall-bladder, hydrops, cystic duct obstruction, etc., which may make cholecystectomy imperative, but it is in those cases in which the cystic duct is apparently healthy and patulous, and the gall-bladder capable of regaining its normal function, that we are often in doubt as to the better procedure, cholecystostomy or cholecystectomy.

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HEMATURIA.

Every patient with hematuria should be given the advantage of an early cystoscopic examination. It is the early recognition of pathological conditions in the urinary tract that renders their treatment most favorable and beneficial to the patient.—E. O. SMITH in *The Lancet-Clinic.*

AINHUM, A CASE REPORT.*

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The subject of this report is one of those rare surgical conditions seldom encountered in the United States and infrequently recorded in the literature, for Keen's Surgery speaks of only twelve cases collected in this country (1911). Like some other exogenous diseases it seems to affect only the colored race and gets its name from the African continent. Ainhum is said to be derived from the Negro word meaning "to saw" (Century Dictionary), undoubtedly because of the characteristic feature of the disease by which the affected toe is spontaneously amputated as though by such an instrument. The disease is found in Africa, India and South America, especially Brazil, affecting only the colored race, especially the Negro, and considering our large Negro population, it is rather remarkable that the disease is so rare in this country.

Ainhum affects the little toe singly or bilaterally, occasionally other toes or the fingers, beginning as a furrow or groove around the base in which the skin becomes thick or callous without any primary ulceration. The effect is that which might be produced by a tight string wound about the part. The further course is slow, taking from two to twenty years. As a rule it terminates in spontaneous amputation. The band gradually contracts and strangles the toe, producing finally absorption of the bone.[2] [4] As the furrow deepens the distal portion of the toe becomes bulbous and swollen, the constriction finally dividing the toe. The whole condition being very chronic it is as a rule free of pain, though in my case pain was present early and was sufficiently marked to bring the patient to the clinic.

The etiology is shrouded in a good deal of mystery. It has been attributed to arteriosclerosis, leprosy, trauma and neurotrophic disturbances, a list of causes showing at least a rich diversity and not related by any proof. There is no reference to any case occurring in any subject except a Negro. It may be hereditary. Unna maintains that the process is a linear scleroderma in which the epidermis shrinks and causes pressure necrosis. If arterial degeneration were the cause the disease would certainly occur more commonly and not be limited to the Negro, nor would trauma manifest such predilection of site as the fifth toe; and certainly the process does not seem to bear any similarity to leprosy in its pathology or etiology. We have a more logical explanation for the unusual features of the disease in considering it as a trophoneurosis resembling Raynaud's disease, as is suggested by Dr. Walter D. McCaw.[2] The predilection of ainhum for the fingers or toes at once brings to mind the latter disease which it also resembles in its chronic course, especially in the absence of any primary suppuration.

There are no symptoms except those of the immediate disease. The most noteworthy feature is that it is a chronic process going on to automatic cure by self-amputation, unless there is added a local infection or secondary ulceration with independent symptoms which are unrelated to the original disease. The absence of symptoms and of any great functional impairment renders the victim indifferent to the lesion in its early stage and he applies for treatment only when the deformity is marked or pain is produced by inflammatory changes, the result of this infection or ulceration. Treatment accordingly is practically always amputation.[1] If the case is seen early an effort may be made at cure by following the suggestion of Dr. Leonard Freeman, who says that: "It is claimed that early division or excision of the constricting band may check the progress of the disease."[3]

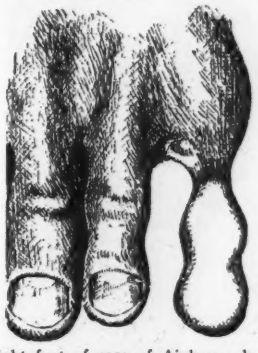

Fig. 1. The right foot of case of Ainhum, showing constriction with ulceration. From a sketch by Dr. Philip Schmahl.

CASE.—B. M., aged 44, single, male, colored, porter, native of U. S.; admitted to the Flower Hospital first December 16, 1912, discharged cured December 31st, readmitted November 14, 1913, discharged cured November 22d. Born in Florida, he lived in Georgia most of his early life. He was unable to give any family history and his personal history showed nothing of interest.

Physical examination: A well developed Negro whose general physique was excellent; heart and lungs negative; abdominal examination normal, except a slight increase in the lower border of the liver. Denies all evidence of syphilis. Four urinary examinations were negative; his blood pressure was 156 and blood count was normal.

* Presented with specimen before the Academy of Pathological Sciences, January, 1913.

Present trouble: He first noticed two years before (in 1910) a tiny furrow on the plantar fold of the fifth toe of the right foot that was becoming hard and callous where the toe joined the foot, free of pain or swelling. There was no apparent change in this condition till two or three months before he applied to us; then the furrow extended around the whole toe, which was painful and tender. On admission it presented the appearance shown in figure 1. The skin, especially above and below the furrow, is dry and harsh; the furrow is a rim of callus, the nail almost atrophied and very brittle. The distal end of the toe is enlarged and distinctly globular. A tiny spot of ulceration is present in the fold between the fourth and fifth toes. A series of skiagrams show no bony change whatever. On December 20th a typical amputation was done through the shaft of the fifth metatarsal so that the incision lay well back in sound tissue; the sutures were removed December 28th, healing by first intention.

Fig. 2. The left foot of case of Ainhum as developing one year subsequent to the disease shown in the right foot. Note development of callous constriction and distinct narrowing of the base of the fifth toe. From a photograph.

Subsequent history: One year later the foot operated on was normal, the scar barely perceptible, and painless. But the man said he thought the other foot was affected. On his first admission the fifth toe of the left foot seemed perfectly normal; now it presented the appearance shown in the photograph, figure 2. A band of scar-like tissue could be seen and felt very clearly beginning to encircle the toe, the periphery of which was a trifle bulbous; there was no ulceration or inflammation; it was not sensitive; but he was anxious to be rid of it, fearing the development of the disease. Accordingly the toe was amputated as in the first instance; the wound healed *per primam* and he was kept under observation for two months, and when last seen was perfectly well and not a bit inconvenienced by the losses sustained in both feet. As we wished to preserve the specimens intact no pathological examination was made; a number of these cases have been reported as showing no definite histological changes, and the specimens are being kept for didactic purposes.

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[4] Trumann Abbe, Medical Record, March 18, 1911. A study of two cases, with four diagrams.

TRANSPLANTATION OF BONE.

1. Transplantation of bone is preferable to the metal plate in the treatment of cases of non-union with the probable exception of the femur.

2. Clinical and radiographic studies tend to show that the hard cortical bone used as an intramedullary plug is slowly absorbed, and does not persist as a permanent splint. In its absorption it promotes osteogenesis.

3. Absolute fixation is to be maintained, particularly in the humerus, where a transplant is used.

4. The inlay method is the method of choice where possible. By it an anatomical approximation of tissues is possible: periosteum to periosteum, cortex to cortex, and medullary lining to medullary lining.

5. Hard bone placed in the spongy bones in the epiphyses is gradually absorbed, to be replaced by bone normal to that area.—M. S. HENDERSON, in the *Journal-Lancet.*

BONE CYSTS.

Cysts of bone should be detected in their incipient stages before extensive destruction of the medulla has taken place.

Early operation results in prompt cure, and prevents deformities and extensive bone plastics.

A localized trauma followed by persistent but not severe pain, and localized but not true "wincing" tenderness—symptoms and signs of an untreated "chipping" fracture—should arouse clinical suspicion of a minute, early bone cyst, the corroboration of which may be afforded by close scrutiny of a roentgenogram at the site corresponding to that of the localized tenderness.—P. G. SKILLERN in *The J. A. M. A.*

PREVENTION OF POST-OPERATIVE GAS PAINS.

To obviate distention and gas pains after laparotomies, pass a tube up through the rectum into the descending colon *before closing the abdomen,* and retain it there several days. With the operator's hand to guide it it is easy to pass the tube sufficiently high.—J. J. BRONSON, M D., Dubuque, Iowa.

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WALTER M. BRICKNER, M.D., Editor

NEW YORK, JUNE, 1915.

ARE THE ORDINARY HERNIAE EVER TRAUMATIC?

The existence of an umbilical, femoral or inguinal hernia is sometimes noted by the individual or by the examining physician after a fall or other injury; or discovered independently of a recent effort or injury, the patient is apt to think back to some time when he "lifted a trunk" or "moved a piano," to account for the "strain" that caused the "rupture." (People generally regard herniæ as due to *strains,* and the unfortunate term *rupture* clearly gives them title to such belief.) And thus it happens that claims on accident insurance companies are made by policyholders who develop herniæ—claims that are often made by the individuals in entire good faith and are certified by their physicians in equally good faith.

Are such claims justifiable in fact? Are physicians properly interpreting the pathogenesis of herniæ in acknowledging sudden abdominal strains as their causative factor? We believe they are not.

Whether or not herniæ do or may arise from such strains is not purely a medical question. It is an economic question of considerable importance, not only because of claims made by individual holders of accident insurance policies but, more especially, because Workmen's Compensation legislation puts on the employers and their insuring companies the burden of disabilities incident to their occupation, that befall the workers in many industries.

Traumatic abdominal herniæ do, of course, occasionally occur as the immediate or remote result of crushing or penetrating injuries to the abdominal wall or diaphragm. But herniæ through the umbilical, inguinal and femoral canals are never traumatic, we believe (except to be quite exact—in such rare instances in which a penetrating injury may have actually occurred to those canals). Herniæ discovered at those sites were present *before* the strain, fall or blow—potentially, or small or, most often, fully developed but perhaps unnoticed. That is to say, the prolongation of peritoneum and usually, if not always, some, at least, of the hernial contents were present and the strain or injury, if it had anything whatever to do with the hernia merely hastened the inevitable filling and stretching of the pre-existing sac.

We are glad to see that this view, which we have long held, is also that of Alexis Moschcowitz, of New York, whose studies of the pathogenesis and anatomy of abdominal herniæ are widely recognized. In an address on The Relation of Hernia to the Workmen's Compensation Law (*Medical Record,* April 3, 1915), he boldly states, and supports this with anatomical data, that the abdominal herniæ do not result from trauma.

We are strongly inclined to go further than does Moschcowitz and to accept the congenital theory of herniæ, which assumes the presence of the hernial canal, from birth, of a projecting knuckle of peritoneum, which, however, may not become occupied by abdominal contents for many years. In the "congenital inguinal hernia" of the text-books a tunica vaginalis has not separated off from the processus vaginalis which remains in the inguinal canal and scrotum and contains the testicle and the bowel or omentum. But the so-called "infantile hernia" and the "hernia into the funicular process" are not a whit less congenital. In them the processus vaginalis is closed off from the testicular tunic, but it remains in the canal. And these forms are observed in early infancy quite as often as the variety long recognized as "congenital." It is not difficult, then, to assume for inguinal herniæ of later appearance that a longer or shorter portion of the processus vaginalis persists in the canal, projecting with the cord through a small hiatus in the transversalis fascia which, in after years, becomes stretched and allows the peritoneal pouch to fill and enlarge. The purely extraperitoneal forms of direct inguinal herniæ may likewise be assumed to exist, potentially, at birth—an assumption that best explains their frequent bilaterality. The congenital theory is based, then, on recognized embryonal proc-

esses that take place at the inguinal and umbilical outlets, and for femoral herniæ it is not difficult also to conceive of a small process of peritoneum existing at birth in the femoral fossa.

The theory of the fetal preformation of herniæ is supported by the admittedly congenital varieties of inguinal and umbilical herniæ, by the hernia associated with non-descent of the testis and by hernia of the ovary, which, we believe, are also accepted as congenital; it is the most satisfactory explanation of the common occurrence of herniæ in infancy and childhood; it best explains the rapid development of complete (scrotal) herniæ, the frequency of bilateral inguinal herniæ, and many other factors. It is an hypothesis obviously difficult to prove, however, and unless it is generally accepted it will remain of scientific rather than of practical interest, lacking the economic importance that attaches to the relation of trauma to the development of abdominal herniæ.—W. M. B.

ANOTHER CANCER "TREATMENT."

There was recently published in the *New York Medical Journal* (May 15th), and immediately and enthusiastically heralded in the lay press, the account of a new "Treatment for Inoperable Cancer." This "treatment" is given out by S. P. Beebe, M. D., professor of experimental therapeutics, Cornell University.

> "The method in question is not original with the writer. During the last year certain modifications and possible improvements have been made, but the fundamental idea and the composition of the therapeutic agent were originated by Alexander Horowitz, Ph. D., an Austrian biologist and chemist."
>
> * * * "As administered by Dr. Horowitz, the treatment consisted of the repeated application of a poultice to the affected parts and the administration internally in the form of an extract, either as a liquid or as a pill, of certain substances contained in the poultice itself." * * *
>
> * * * "The powder from which the poultice is made contains a considerable number of substances of plant origin. Seeds, roots, bark and flowers taken from a number of different plants are prepared in the form of a powder, from which Doctor Horowitz made a poultice. The powder contains the following substances: Menyanthes trifoliata, Melilotus officinalis, Mentha crispa, Brassica alba, Anemone hepatica, Viola tricolor, Anthemis, Fructus colocynthidis, Lignum quassiæ, Urtica dioica, Radix rhei, Hedge hyssop."

Beebe refrains from telling why the Austrian biologist and chemist selected just this particular lot of "herbs" and spurned the ruddy tomato, the fragrant onion and the luscious squash. And with admirable restraint Beebe also resisted the no doubt great temptation to tell how the plant agencies are prepared and in what proportion they are mixed.

> "Brief directions and precautions for the safeguarding and use of this treatment may be of interest,"

he says, and then he solemnly proceeds to announce that

> "a poultice is prepared for application by the usual methods. The powder is mixed with a small quantity of boiling water sufficient to make a thick paste; this is spread upon gauze, covered by one layer of gauze and applied to the affected part in the same way as one would apply a mustard plaster. The skin must be first covered with a layer of petrolatum. * * *"

The profession, for whose benefit, of course, the article was written, will be grateful for the warning that this particular poultice must be prepared and applied just like any other poultice; and, after receiving this abundant information, he would be presumptuous, indeed, who wanted to know what's in the poultice.

In addition to the pills and the paste, Beebe has employed "this therapeutic agent" by injection directly into the tumor mass, to produce in its depths an intense reaction. Believing that the general improvement of the patient seems to be "somewhat greater" than might be expected from the application of a local irritant or the cleaning up of superficial infection, Beebe inclines to the belief that "this therapeutic agent" produces beneficial constitutional effects. He has therefore employed it in hypodermatic injections at a distance from the neoplasm. Although he refers to "fairly definite responses in the growth" from these distant injections, it is astonishing that a professor of experimental therapeutics should draw any conclusions from this in cases every one of which also received injections into the tumor and, incidentally, most of which were also treated by radiotheraphy. Beebe refers, cautiously, to the possible use of the plant substance mixture intravenously and mentions its trial upon *a dog* without causing marked disturbance to the circulation or to the excretory organs.

As Beebe says, it is quite justifiable in the conduct of cancer therapy research to make trials of empirical remedies; but it is amazing that a professor in one of our leading medical schools should publish, as a result of his observations of such an empirical method, a wholly unscientific, even though only preliminary, report based on results by no means convincing and, many of them, quite unsatisfactory.

Since he publishes not a cancer cure but merely "a treatment" of inoperable cancer we pass over, though reluctantly, the fact that in his case reports he gives no dates and but scant records of the periods of observation. These cases, which Beebe selects from among others (total number not stated) as "fairly representative" of his results, are sixteen in number, divided into three groups.

The first group is of three private cases of superficial skin cancers—two rodent ulcers of the forehead and one epithelioma of the temple. All were healed by applications of the poultice, a result which, as Beebe admits, and as the histories of the cases suggest, might have been obtained by other methods, "such as radium, x-ray and various forms of escharotic paste."

The second group is of seven "hopelessly incurable and inoperable" cases at the General Memorial Hospital. Of these seven cases five died under treatment and the other two refused to continue it. Of these two, one was greatly relieved generally and locally by the breaking down of the mass and the surgical evacuation of the detritus, the neck sinuses healing but not the growth in the floor of the mouth. Of the five who died, two had been ameliorated by the shrinkage of the growth. All of these patients had x-ray treatment also.

The third group of six cases, treated with the assistance of Dr. J. Wallace Beveridge, in the Polyclinic Hospital, Beebe considers interesting because, he says, *they were treated entirely by hypodermatic injection of the extract.*

He must have meant injections with a hypodermatic syringe, for *everyone of these cases had many injections into the tumor mass.* None of these cases had coincident x-ray treatment, however. Following are these six cases:

Recurrent calloid carcinoma of the rectum. During six weeks stay in the hospital sixteen injections into the tumor mass. Large broken down masses were discharged, with great relief of local symptoms and freedom from pain. "After leaving the hospital the patient had a few injections into the arm, and he continued to gain in weight and strength."

Recurrent hypernephroma of loin, growing rapidly. Twenty-two injections into the tumor, which broke down and discharged. After leaving hospital, injection of extract in the arm every second or third day (period not stated); he "continued to gain in weight and strength, and the tumor mass *was* practically entirely gone" (italics ours).

Recurrent carcinoma after breast amputation. Mass three inches in diameter in scar. X-ray treatment *a short time prior* to admission. Injections into mass and in arm. Mass broke down and discharged, complete healing, subsidence of edema of arm.

Three small skin nodules and one auxiliary gland, recurrences after amputation of male breast. Four injections into the nodules and the gland. Absorption and disappearances.

Large carcinoma of the bladder. Injections only into the tumor through a suprapubic opening. Supression of urine. Death.

Epithelioma of floor of mouth and glandular extension. Injections into glands and into arm and poultices. Still under treatment. Pain now very little, mouth clean, lymph nodes almost absorbed, gained 13 pounds, looks and feels much stronger.

This third group makes a much better showing than the second although it demonstrates no peculiar therapeutic virtue in the plant mixture.

Of the sixteen cases, three were epitheliomata, all healed—which might have been accomplished by other escharotics. Of the remaining thirteen cases, six died under treatment, two having been temporarily relieved locally. Of the seven others who survived the treatment, two refused to continue it, but one of these was much relieved, although still far from cured. Among the remaining five who were ameliorated by the shrinkage or, in two cases, the disappearance of the growth, in only one was the disappearance by absorption without external discharge, and in that one the nodules, and gland, *which were not examined,* were quite small and "except for the fact that the areas were already a mass of scar tissue the recurrent nodules might have been removed by operation."

Says Beebe,

> "If an actual diminution and regression in the bulk of malignant tissue is taken as a criterion by which to judge of the effect of this remedy, it is the writer's opinion that the evidence presented can lead to but one conclusion."

There will, indeed, be but one conclusion, and he will then be convinced that "diminution and regression in the bulk of malignant tissue" is not a criterion by which to judge the effect of a cancer remedy. Such a local necrotizing action—and there is no acceptable evidence produced that the "seeds, roots, bark and flowers" used by Beebe have any other action—has been produced, with quite as good results, by other agencies selected with far more scientific rationale than this queer garden compound.

The Horowitz herbs will go the way of all the rest of these agencies. If the horticultural effusion had appeared only in the medical press it would have died a peaceful death in the bosom of the profession.

THE JOURNAL, at any rate, would have passed it by merely as unfortunate for the scientific dignity of the medical school and the hospitals from which it came, and with the silent observation that Beebe's cancer studies had again led him into undue enthusiasm. But, unfortunately—and Beebe's article shows that he feared it—the new "treatment" found publication also in a daily and in a Sunday mag-

azine issue of at least one prominent newspaper. The result will be, probably already has been, the pilgrimage of unfortunate sufferers for the cure that will not be forthcoming. While this lasts, of course, those who have been thus unexpectedly advertised will profit by the publicity.—W. M. B.

CANCER NUMBER.

The next issue of The Journal will be devoted to Cancer. The contributed articles will deal with the Early Diagnosis of Carcinoma; of the Breast, by Jabez Jackson; of the Stomach, by Irving S. Haynes; of the Esophagus, by Willy Meyer; of the Uterus, by Robert T. Frank; of the Bladder and Prostate, by J. Bentley Squier and by Edwin Beer; of the Air Passages, by Emil Mayer; of the Rectum, by Jerome Lynch; of the Pancreas, by Burrill Crohn; Carcinoma in General, by J. H. Carstens; and other Aspects of Cancer, Clinical and Pathological.

Surgical Suggestions

Patients suffering with sciatica should be examined carefully for a possible lesion of the pelvic bones, the vertebrae or the spinal cord itself.

Simple retroposition of the uterus is quite normal to many women and should not be "corrected" without clear indications.

It is not reasonable to believe that a retroposed uterus by its mere weight upon the bowel can cause constipation.

Among the diagnostic possibilities of a flattened or rounded mass in the midline of the abdomen it is worth remembering fused or horseshoe kidney. The diagnosis can be established by pyelography.

The occurrence of dermoids in the midline of the perineum is too often forgotten. Situated at the anterior anal margin a dermoid cyst may be mistaken for a hemorrhoid, or if discharging through a sinus, for an ordinary "fistula in ano." Situated more anteriorly the sinus is often mistaken for a urethral fistula.

A strong solution of potassium permanganate painted over macerated, sodden skin surfaces, as between the toes or about the anus, and allowed to dry, gives much relief and often effects a cure. The application may be made daily or less frequently. Keep the painted surface dry with talcum powder and absorbent cotton.

Surgical Sociology

Ira S. Wile, M. D., Department Editor.

1913 MORTALITY RATES.

Among the causes of death, surgical shock and traumata of various kinds incident to operative procedures find no listed place. Diagnostic surgery has practically a negligible mortality, while prophylactic or therapeutic surgery is never considered in accounting for death.

The principal diseases causing more than one half of all the deaths in the United States include tuberculosis, pneumonia, heart diseases, renal diseases, apoplexy, cancer, diarrohea and enteritis, diphtheria and typhoid fever. Naturally, from the standpoint of surgery, the relation of heart disease and renal disease to the general mortality is of distinct importance.

While the mortality rate for tuberculosis has been declining yearly, that for heart diseases has been increasing. In 1913, the death rate from heart diseases, organic diseases of the heart and endocarditis was 147.1 per hundred thousand. The death rate from Bright's disease and nephritis for 1913 was 102.9 as contrasted with the mortality rate of 89 per hundred thousand in 1900. This rising mortality rate from these serious causes indicates the importance of careful examination of the heart and kidney function whenever possible before operative procedures are attempted. The mortality rate, slowly increasing over a period of years suggests a large increase in the prevalence of these conditions.

The vital statistics for 1913 issued by the Bureau of Census reveals the fact that improved sanitation and widespread education in the laws of health are playing an important part in lessening the serious menace of tuberculosis. Within the nine years from 1904 to 1913, the mortality rate from tuberculosis in all its forms fell from 200.7 to 147.6 per hundred thousand. The decline has been consistent and continuous without any of the fluctuations that had existed prior to 1904. The marked increase in tuberculosis institutions and the prompt attention which is now given to tuberculosis in its incipiency is responsible for the decreased number of cases of bone and joint tuberculosis of severe types which present themselves for clinical diagnosis and therapeutic treatment.

The great increase in cancer deaths during 1913 is probably due in part at least to more accurate diagnoses and greater care in medical registration. The rate rose from 63 per hundred thousand in

1900 to 78.9 in 1913. From the standpoint of diagnostics and research, it is worth while noting that 40 per cent. of the deaths from carcinoma resulted from cancers of the stomach and liver.

The death rate from diseases of the bones and joints, excepting tuberculosis and rheumatism, has decreased very slightly during the last few years. The general rate for 1913 was 2.6 as opposed to 2.8 as the average for the years 1906 to 1910.

The number of deaths from specific conditions such as amputations apparently is decreasing very markedly and the general mortality rate from this cause is below one-tenth of a per cent., per hundred thousand population.

Incidentally, violent deaths in 1913 had a rate of 85.3 as compared with the general average 86 for the years 1906 to 1910. It is interesting to find the actual number of deaths from traumatism of different types in 1913. For example, by firearms 1,572, by fall 9,747, traumatism in mines and quarries 2,385, traumatism by machines 1,526, railroading accidents and injuries 8,212, street car accidents and injuries 1,988, automobile accidents and injuries 2,488, injuries by other vehicles 2,381. Almost sixteen thousand accidents occurred incident to transportation on land. Similarly, one is amazed by some of the other interesting figures of 1913 which indicate the deaths that were not prevented by surgical attention, although undoubtedly given to the victims as rapidly as possible.

In 1913, there were 9,988 successful suicides in the registration area, 4,935 deaths from burns, conflagrations excepted, 4,567 deaths from homicide. With such figures of mortality from preventable causes, we note in strange contrast, the few deaths from the only actually non-preventable disease, old age, which was responsible for the death of 13,914 persons in 1913.

Orthopedic Surgery.

Diseases of bones and of joints furnish many of the baffling problems of modern medicine. They affect tissues whose histology, physiology, and pathology are almost unopened books. We cannot understand disease in tissues of whose structure and function we are ignorant. Here is a work to fire the imagination of the young. A few years spent in patient investigation may bring more lasting renown than a lifetime of clinical observation.

We have been too ready to draw conclusions without sufficient foundation of fact. One of the great needs in orthopedic surgery is the accumulation of solid facts.—Leonard W. Ely in *The J. A. M. A.*

Book Reviews

Lectures on the Heart. By Thomas Lewis, M. D., F. R. C. P., D. Sc., Physician, City of London Hospital; Assistant Physician and Lecturer in Cardiac Pathology, University College Hospital, London. Duodecimo; 124 pages; 83 illustrations. New York: Paul B. Hoeber, 1915. $2.00.

These lectures were delivered in America last October and are entitled: The Excitation Wave of the Heart; The Method of Electrocardiography Exemplified; The Relation of Auricular Systole to Heart Sounds and Murmurs; Observations Upon Dyspnea, with Especial Reference to Acidosia; and Observations Upon Cardiac Syncope. In the first lecture, the Excitation Wave, the electrical waves of the heart are expounded, and the method of their measurement is described. The second lecture on Electrocardiography describes the interpretation of electrocardiographic readings of the normal heart and of the commonest abnormal conditions. The third lecture, on the Relation of Auricular Systole to Heart Sounds and Murmurs, opens an entirely novel field. Lewis is now enabled to graphically reproduce heart sounds as accurately as the electrical wave, and arrives at some highly interesting observations concerning the relation of the auricular systole to heart sounds and murmurs. The fourth lecture, upon Dyspnea, also opens a promising field in cardiac physiology. This work is based upon the interesting observation of Bancroft, a pupil of Lewis, who has shown that the dyspnea in certain cases of cardiac disease is due to the presence of non-volatile acids in the blood. By a chemical examination of the blood, Bancroft is able to calculate with a remarkable degree of accuracy the presence and degree of dyspnea of the affected patient. This observation also explains the strange disproportion between the cyanosis and breathlessness in given cases. This study, it seems to us, will prove of wide clinical applicability. In the last lecture, Observations Upon Cardiac Syncope, Lewis demonstrates the clinical and electrocardiographic phenomena of syncope in the various forms of heart maladies.

The lectures demonstrate superlatively the advantages of a close association between clinical and laboratory methods.

Books Received.

John Shaw Billings. A Memoir. By Fielding H. Garrison, M.D.; Octavo; 432 pages; illustrated. New York: G. P. Putnam's Sons (The Knickerbocker Press), 1915.

A Practical Handbook of Surgical After-Treatment. By Alan H. Todd, B.Sc., M.S., London; F.R.C.S., England, Surgical Registrar and Tutor, Guy's Hospital. Duodecimo; 256 pages; 37 illustrations. New York: Longmans, Green & Co., 1915.

The Origin and Nature of the Emotions and Miscellaneous Papers. By George W. Crile, M.D., Professor of Surgery, Western Reserve University, Cleveland. Octavo; 240 pages; 76 illustrations. Philadelphia and London: W. B. Saunders & Co., 1915. $3.00 net.

Fewer and Better Babies, or the Limitation of Offspring by the Prevention of Conception. By William J. Robinson, M. D., Editor of *The Critic and Guide* and of *The American Journal of Urology*, author of "Never Told Tales," "Practical Eugenics," etc. With an Introduction by A. Jacobi, M.D., Ll.D. Duodecimo; 245 pages. New York: The Critic and Guide Co., 1915.

Progress in Surgery

A Résumé of Recent Literature.

Procedures Following Nephrectomy. WM. J. MAYO, Rochester, Minn., *Journal American Medical Association,* March 20, 1915.

Certain procedures to meet accidents and special conditions following nephrectomy are discussed by Mayo. The third portion of the duodenum may be injured and he has reported such cases before. This is most likely to occur in attempting to secure the pedicle for the purpose of ligation, especially when it is greatly infiltrated by inflammation and fixed in close relationship with the duodenum. Under such circumstances, the pedicle may slip from the retaining forceps, and efforts to grasp with toothed forceps the bleeding wounds may result in a duodenal injury, and perforation from necrosis may follow. As soon as the diagnosis of this is established, Mayo advises opening the abdominal cavity through the anterior wall, incising the peritoneum to the right of the curve of the duodenum, elevating the duodenum itself from its peritoneal bed at its outer side, and closing the opening directly by suture. Mayo also recommends the two-forcep method for the ligation of vascular pedicles, with special reference to nephrectomy. A deeply placed pedicle occasionally slips out of the grasp of the ligature, and this is especially true of the pedicle of the kidney, if a single clamp is used. Reaching in and grasping the vessel in a slipped pedicle is dangerous. Such vessels can be easily caught and held with fingers, guided by the spurting of blood, and then the forceps can be applied with care. If the two-clamp method is used, slipping of the pedicle should not occur. The kidney is first exposed through an appropriate incision. The peritoneal fat is separated, the ureter divided between ligatures, and the ends separated. Forceps should not be left on the part to be removed with the kidney, which should be dissected well up to the pelvis, so that it be not tied into the vascular pedicle. The pedicle is exposed by careful removal of the fat, and, if possible, the vessels ligated separately; but if the pedicle is thick and deeply placed, or the operation is a subcapsular nephrectomy, two forceps are placed on the proximal side, if possible, about three-quarters of an inch apart, and the kidney cut away. A ligature is then put around the pedicle beneath the deeper pair of forceps, and slipped into the groove made by the forceps as they are removed, and tied; while the pedicle itself is still safely retained in the distal forceps. A second ligature can then be placed, and the distal forceps removed, if the knot is pulled tight. The two-forcep method is specially applicable in nephrectomy and splenectomy; and in the latter case, care should be taken that the tail of the pancreas does not extend up into the hilum of the spleen. If so, it should be dissected out before the clamps are replaced. Mayo has succeeded in using the two-forcep method on the renal pedicle; but in some other situations, only a single pair can be applied to a pedicle and that not always satisfactorily. In such a case, it is necessary to use a ligature on a needle, which, threaded, is passed through about one-fourth of the diameter of the pedicle; then with a single knot, the tissues are brought sufficiently tight under the end of the forceps to secure a good hold. The ligature is then brought around the opposite side of the pedicle and a single knot made; the forceps are slowly loosened, and the ligature pulled home; both sides of the pedicle are thus drawn tight, and the ligature cannot slip. This method is credited to Professor Graser of Erlangen. Other special directions are given for large tumors, for which an anterior transperitoneal incision is preferable over a retroperitoneal lateral, especially for malignant disease. It permits careful examination of the growth, the liver and the abdominal contents, and shows any metastases present. The lungs should always be roentgenographed, to determine metastases. In malignant renal growths, if the tumor is removed, the ureter should be located at once, divided, and the end sterilized well below the growth to avoid getting infected material into the lower portion. The upper end of the ureter is dissected up through the pelvis, and the renal vessels secured at their origin before any attempt is made to remove the growth; otherwise polypoid projections from the growth in the renal vein may be forced into the vena cava. In Mayo's experience, less than five per cent. of the ureters in tuberculosis of the kidney require removal, and usually only when a stricture exists down close to the bladder. If the kidney is changed to a closed sac, the ureter will often be found obliterated just below the pelvis, and ligation and sterilization disposes of it. In the "pipe-stem" ureters, and all with lumen free from mixed infection, injecting 5 to 10 minims of a 95 per cent. solution of phenol into the ureter with ligation insures against further trouble. In these two types of cases, the nephrectomy wound should not be drained, on account of the danger of secondary infection of the uretal stump. To put it broadly, in all tuberculous kidneys, which have become closed sacs and lost their function, the ureter may be sterilized and dropped in the wound, which is closed without draining. "When there is secretion of urine and especially when there is a mixed infection present, if the ureter be tied and dropped into the wound it will occasionally cause wound infection and siuns formation. If the other kidney be involved, the patient may eventually die from phenomena having their origin in the infection. In these cases the stump of the ureter should be attached to the skin at the anterior extremity of the incision and should not be dropped into the wound. When so attached it permits the safe escape of discharging fluids. This is especially true in recent involvement of the kidney when there is considerable functionating renal tissue. The rule should be that when the kidney removed for tuberculosis is still secreting urine, if there is any evidence of mixed infection, the better practice is to attach the stump to the skin to prevent the possibility of wound infection with tuberculosis and sepsis. In just such cases the ureter will be found enlarged and softened but not shortened or rigid."

Hematogenous Infections of the Kidney. G. E. BREWER, New York, *New York Medical Journal,* March 20, 1915.

"From a study of the experimental data here recorded, the results obtained by other investigators, and the accumulated clinical experience of the past two decades, we may conclude, first, that during the progress of any acute infectious disease a certain number of microorganisms find their way into the blood current, and that many of these organisms are excreted through the kidneys. If the number of these organisms is comparatively small, if their virulence is low, and if the kidneys are in a healthy condition, the transit of the organisms through the renal apparatus gives rise to no demonstrable lesion. If, on the other hand, the number of organisms is large, if their virulence is high, or if one or both kidneys are diseased, lesions are produced which have been described above, and which may at the outset produce an overwhelming and fatal toxemia, or may proceed more slowly to the development of any of the classical types of renal infection or suppuration; second, that while the disease may be bilateral, in a large number of instances it is unilateral, and that its unilateral character is due to the fact that the affected kidney has lost to some extent its normal resistance to infection by trauma, abnormal mobility, previous disease, calculus irritation, anemia, passive hyperemia, complete, incomplete, or intermittent hydronephrosis; third, that the presence in the body of a kidney damaged by trauma or disease to such an extent as to lower its normal resistance to infection is a distinct menace to the individual, in that it possesses a potential susceptibility to even the mildest forms of blood infection; fourth, that while I have been able to produce these lesions in animals by bacillus coli, streptococcus pyogenes, staphylococcus pyogenes aureus, bacillus typhosus, the pneumococcus, and the pyocyaneus, in clinical cases, I have only been able to isolate the first four of these organisms. It may be added, however, that in the number of clinical cases the results of my bacterial investigations have been negative, notably in one instance in which the disease was known to be sequel of scarlet fever.

"From my experimental studies I have been impressed

with the great difficulty in producing in animals an ascending nephritis, which is in marked contrast to the ease with which it is possible to induce a hematogenous infection. This would seem to corroborate my impression, derived from clinical observation, that hematogenous infection was responsible for the greater number of cases of renal sepsis, and would tend to establish the fact to which Israel and others have already called attention, that even in septic conditions of the lower urinary passages the concomitant renal lesion may be of hematogenous origin."

Epididymectomy for Acute Epididymitis, as an Out-Patient Procedure. A. H. CROSBIE and A. RILEY, Boston. *Boston Medical and Surgical Journal,* May 6, 1915.

Finding palliative treatment unsatisfactory in acute epididymitis, Crosbie and Riley tried epididymectomy, and with gratifying results; 20 to 30 cc. of 1 per cent. novocaine solution is infiltrated into the cord and the inguinal canal, the needle reaching the globus major; the scrotum is anesthetized all the way to the perineum on the side to be operated. After waiting fifteen minutes a lateral incision is made so that the tunica vaginalis is opened near the epididymis. Hydrocele fluid is liberated, as a rule, and adhesions bluntly divided, so that the testis and epididymis are delivered through the incision. The indurated zones in the epididymis are punctured with a tenotome whether pus be visible or not. The organ is washed off with saline solution, a rubber drain is inserted along the length of the epididymis and brought out at the lowermost angle of the incision, and the edges of the wound are loosely approximated with silkworm catgut.

The advantages of epididymectomy are: (1) relief follows promptly and is permanent; (2) the course of the disease is shortened, as is also the urethritis; (3) the danger of subsequent sterility is reduced; the operation is simple and can be properly done in an out-patient clinic.

Fulguration Treatment of Tumors of the Bladder. H. L. KRETSCHMER, Chicago, *Journal American Medical Association,* March 27, 1915.

Kretschmer describes the fulguration treatment of bladder tumors started by Beer nearly five years ago. It has been so uniformly successful that modern urinary surgery, he says, absolutely demands this form of treatment in these types of tumors. Though not so universally employed in Europe as in this country, it is gaining in favor there, and it is safe to assume that it will soon become as popular as it is here. The term fulguration has been objected to and Thomas prefers the term "high frequency dessication," while various other terms have been used by different authors. It was early recognized by Beer that a careful selection of cases was necessary and malignant cases excluded. It may not be possible always to determine the character of the tumor, however, and the removal of a fragment for histologic examination has been condemned as absolutely dangerous by many. It does not follow that because a tumor does not yield to treatment it must necessarily be malignant. The best results have been obtained in papillomas that have been previously operated on, that is in cases with recurrence. These, however, may not always be true recurrences. The possibility of overlooking small tumors must be considered. The technic is described by Kretschmer as follows: "The patient is prepared for systoscopic examination. The bladder is distended with boric solution. A ureteral catheterizing cystoscope is passed in the bladder, and a fulguration catheter is introduced through the catheter channel into the bladder. The tumor, or one of the tumors, if there are multiple growths, is located and the catheter passed forward to the tumor. The method of applying the current is variable. Some plunge the wire directly into the substance of the tumor, while others prefer to leave a small gap between the end of the wire and the growth. I have worked both ways and it does not seem to make much difference in the results. Two types of current have been employed, the unipolar or Oudin, and the bipolar or D'Arsonval. If the bipolar current is used, one pole is connected with the fulguration catheter and the other terminates in an electrode, the placing of which depends on the location of the tumor. If the tumor occupies the base of the bladder, a large flat plate may be placed under the buttocks, or an electrode may be placed in the rectum, whereas, if it occupies the upper wall of the bladder, a large flat plate is placed over the suprapubic area. I have always used the portable apparatus made by Wappler, and it has given very satisfactory results." In small growths, the fulgurations should begin at the periphery, but in larger ones it might be advisable to apply the current directly to the pedicle, if possible, which is not always the case. The pain experienced by the patient is almost entirely in the cystoscopy, though it is frequently complained of when fulgurating the base, or when the cable touches the mucous membrane of the bladder. The duration varies and the number of applications depends on this. Kretschmer has not found a single untoward result recorded in the literature from this treatment, which frequently acts as a permanent hemostatic in bleeding cases. Small pieces of tissue may adhere to the fulguration catheter, interrupting the treatment. A local reaction follows, depending in part on the intensity and duration of the treatment, which has been in some cases mistaken for carcinoma.

Ureteral Calculi; Special Means of Diagnosis and Newer Methods of Intravesical Treatment. J. T. GERAGHTY and FRANK HINMAN, Baltimore. *Surgery, Gynecology and Obstetrics,* May, 1915.

Only in rare instances can the presence or position of ureteral calculi be definitely determined by the symptoms which are rarely of diagnostic aid. Even radiography fails in a large percentage of cases. Occasionally collargol ureterograms will be of service where the roentgenograms will fail. Wax-tipped catheters are the best means for detecting ureteral calculi and succeed in helping to make the diagnosis when skiagraphs have failed. A considerable percentage of stones which enter the ureter pass spontaneously, and unless the calculus blocks the ureter or produces repeated and violent colic, simple manipulative methods should first be employed rather than operative measures. When calculi lie beyond the juxtavesical portion, displacement with the ureteral catheter, injection of oil or securing relaxation of the ureteral wall by use of the thermocatheter, may bring about the expulsion of the stone. If it lies in the vesical portion of the ureter, cystoscopic procedures should usually be successful.

Anuria Due to Unilateral Calculous Obstruction. LOUIS FRANK, Louisville. *Surgery, Gynecology and Obstetrics,* May, 1915.

Frank reports five cases of this character. The diagnosis must exclude other causes of suppression; the attacks come on suddenly and an important feature in anuria of this kind is the absolute absence of any disturbance aside from the lack of urinary secretion. A history of previous attacks of calculous colic often exists. Operation measures, quickly and expeditiously carried out, are necessary.

A Case of Multiple Pulsating Tumors Secondary to Hypernephroma. F. TAYLOR, London, *Lancet,* March 6, 1915.

A man, aged 59, presented four tumors of the bones, in the elbow, shoulder and both buttocks, all of which pulsated and gave a distinct bruit. In addition the patient had hematura, but no tumor of the kidney was palpable. The patient died eight months later. At autopsy the masses proved to be hypernephromata secondary to a tumor in the left kidney. Taylor emphasizes the frequency of bone metastases with hypernephroma of the kidney, and the fact that such metastases often pulsate.

A Simplified Technique for Suprapubic Prostatectomy. A. J. MCKINNON, Lincoln, Nebraska. *The Urologic and Cutaneous Review,* April, 1915.

McKinnon eliminates washing out the bladder before and after operating; he omits stitching the bladder to the abdominal wall. He makes a small incision through

skin and fascia, separates muscles bluntly, pulls up prevesical fat and peritoneum with the finger. The bladder is punctured through its apex. The left index finger is introduced into the wound down to prostatic urethra. A finger of right hand is placed in the rectum and the prostate is enucleated; iodoform gauze is led into the prostatic cavity.

By these steps prostatectomy is made as simple a procedure as is possible. Making the bladder opening high up does away with the possibility for fistula; the iodoform packing acts as an effectual drain and produces hemostasis.

Operative Treatment of Retroversion of the Uterus. *Surgery, Gynecology and Obstetrics,* May, 1915.

At a meeting of the Philadelphia Medical Society last December, this topic was discussed by a number of the leading gynecological operators. Clark (Philadelphia) favors the Coffey operation, Kelly (Baltimore) now performs a modification of his original suspension procedure. Hirst (Philadelphia) prefers the Alexander operation through a Pfannenstiel incision giving access to the appendages and the appendix, at the same time combining the procedure with a temporary suspension of the uterus. Cragin (New York) is performing a Gilliam operation through the transverse incision. Bovée (Washington) favors the round ligament operations combined with other measures necessary in each case. Gilliam (Columbus) defends the operation known by his name. Webster (Chicago) advocates the Webster-Baldy procedure. Montgomery (Philadelphia) opens the abdomen and uses the round ligaments and the peritoneum, while Baldy (Philadelphia), favoring his own operation, states that there must be virtue in all of the procedures to warrant their continued use by experienced surgeons.

Treatment of Placenta Previa. JOHN F. WINN, Richmond. *American Journal of Obstetrics,* April, 1915.

The author believes that when the child is viable, dilatation with the rubber bag and podalic version give best results for mother and child. When the child's life can no longer be considered, version offers the best result for the mother, slow extraction being essential. For marginal and lateral varieties of the condition, puncture of the membranes seems to be the only necessary procedure. Cæsarian section should be limited to cases of almost complete previa with profuse hemorrhage, the child probably weakened yet offering reasonable prospects of being saved, the cervix undilated or rigid.

The Significance of Uterine Hemorrhage. H. WELLINGTON YATES, Detroit. *American Journal of Obstetrics,* April, 1915.

Yates contends that all unusual uterine or supposed menstrual bleedings should call for keenest observation as the diagnosis of cancer is not as readily made as it should be even by physicians. All curettings should be examined. There is no "cancer age," many cases occurring in young women. The microscope can be dispensed with only when there is a protruding, undoubtedly carcinomatous mass or when digital exploration furnishes conclusive evidence of malignancy.

On the Occurrence of a Nine-Millimeter Human Embryo in the Margin of a Full-Tern Placenta. ROY L. MOODIE, Chicago. *Surgery, Gynecology and Obstetrics,* May, 1915.

This remarkable instance has been thoroughly studied by Moodie, who gives the possible interpretations of the finding of a few weeks' old embryo at the margin of a placenta at full-term. The questions of parthenogenesis, of fertilized polar bodies, of twins—one small, due to inanition—of an embryoma and of superfetation are considered. [There is also the possibility of a missed abortion, the fetus having been kept from degenerating by absorption of the surrounding fluids.—ED.]

Pylephlebitis Complicating Appendicitis. EDMUND ADAM BABLER, St. Louis. *Annals of Surgery,* May, 1915.

Except for perforative peritonitis Babler believes that the gravest present day complication of appendicitis is pylephlebitis with multiple abscesses of the liver or of the lung. Pylephlebitis is less rare than is supposed. Many patients die or recover where the condition was unrecognized.

Multiple abscesses of the liver produce distinct chills, followed by high temperatures with profuse sweating; there is also urobilin in the urine and persistent icterus. Locally there is pain, often severe; the liver dullness is increased; there may be local edema. For the diagnosis of multiple liver abscesses, in addition to these symptoms, the most important clue lies in the recognition of the *causative appendicitis.* Prophylaxis, therefore, is all important. Remove the appendix just as soon as the diagnosis of appendicitis is made. Where there have been chills, explore the lymphatic draining areas from the appendix region and drain thoroughly. When liver abscesses have formed, the intense pain frequently guides the surgeon to their site. For these Babler drains through the lumbar region. His final caution is not to aspirate the liver until it has been well exposed, unless preparations for immediate operation have been completed.

The Pathogenesis of Umbilical Hernia. ALEXIS V. MOSCHCOWITZ, New York. *Annals of Surgery,* May, 1915.

Moschcowitz, in a carefully considered study, shows that the same factors which operate in the pathogenesis of inguinal and femoral hernial function, also, for umbilical hernia. These factors are the transversalis fascia and the bloodvessels which pierce it. The structures which enter into the umbilical ring are the right and left umbilical arteries below, with the urachus and the umbilical vein above; also the transversalis fascia here thickened to form the so-called Richet's fascia—each of these structures presents, theoretically, a point for hernial formation. In reality, however, the most frequent variety of umbilical hernia makes its way through the opening in the transversalis fascia (here Richet's fascia) for the umbilical vein. This is so because at the birth of the child ligation of its cord produces a firm fibrosis of the two umbilical arteries and urachus to the anterior abdominal wall and thereby reduces to a minimum the likelihood for hernia at this point. The umbilical vein, on the other hand, is deficient in strong connective tissue formation and, moreover, leaves unprotected a portion of the linea alba, since the vein is pulled away from the upper margin of the ring by its attachment to the two arteries and urachus. Umbilical hernial protrusions, therefore, take place, as a rule, via the umbilical vein opening.

Congenital Intestinal Obstruction. V. C. ROWLAND, Cleveland. *American Journal of Diseases of Children,* May, 1915.

Rowland describes a very unusual condition,—a congenital mechanical obstruction of the bowels not due to a developmental defect, in an infant five days old. The child exhibited the usual signs of intestinal obstruction and was therefore operated upon. At operation there was found a complete twist of the mesentery of the small intestine with complete obstruction at about the middle of the small gut. On untwisting the volvulus, gas and feces passed through the intestine, but in spite of the relief of the obstruction the child died the following day.

The author believes the case is important because it shows that although the great majority of congenital obstruction cases are due to development defect and therefore usually incurable, there are rarely cases such as this in which a condition exists that is easily remediable at operation.

Megacolon and Microcolon. LANGLEY PORTER and ALANSON WEEKS, San Francisco. *American Journal of Diseases of Children,* April, 1915.

After summarizing the views of some of the previous investigators of megacolon, the authors describe in detail four cases of this anomaly and add a case of microcolon. They believe with Barrington-Ward that megacolon is a congenital abnormality in the lower end of the hind gut which takes the form of a muscular hyperplasia. It usually involves the rectum and spreads a vary-

ing distance up the pelvic and iliac colon. The whole hind gut or only a localized portion may be involved. The hyperplasia of the muscle gives rise both to thickening of the walls and to increase of bowel lumen. The result is poor function with resulting stasis and then hypertrophy and dilatation above the original lesion.

These cases are characterized by obstinate constipation, great abdominal enlargement, visible peristalsis and constitutional results from absorption of toxic retained products.

The authors believe that mild types of this malady occur, and that the obstinately constipated infants, who while not rachitic, nevertheless present large bulging abdomens, probably belong to this group of diseases. Hertz has called attention to the fact that these children show very large redundant sigmoids on x-ray examination.

The diagnosis of the condition is not difficult. Tuberculous peritonitis in older infants and multiple stenoses in the younger may cause confusion. Bimanual rectal examination is of great aid, especially if made with the child under anesthesia.

In severe cases operation must be resorted to,—colotomy, excision of the colon, and anastomosis have been advised.

Shoulder Disability; A Further Study of its Varieties and Their Treatment. WALTER M. BRICKNER, New York. *Interstate Medical Journal,* April, 1915.

Brickner classifies the causes of shoulder disability (a term which he prefers to "stiff and painful shoulder," because the stiffness often exists without the pain, and vice versa) under the following heads:

1. Subacromial bursitis.
2. Subacromial bursitis with injury to the supraspinatus or, occasionally, the infraspinatus tendon, and calcareous deposit.
3. Spinatus tendon injury with slight or perhaps no associated bursitis.
4. Fracture of the greater tuberosity of the humerus.
5. Subluxation (forward) of the humerus.
6. Spontaneously reduced dislocation; with which, of course, may be grouped disability following surgically reduced dislocation.
7. Sprain or tear of the capsule without dislocation.
8. Subcoracoid bursitis.
9. Biceps tendovaginitis.
10. Traumatic periostitis.
11. Developing syphilis, tuberculosis and neoplasm of the head of the humerus.
12. True brachial neuritis.
13. Unclassifiable cases, most of which probably belong to one or another of the above groups, but some of which perhaps remain to be accounted for otherwise.

An article fully describing 1, 2 and 3 appeared in the March issue of the *American Journal of the Medical Sciences,* and was abstracted in the April issue of the JOURNAL. For a description of 5, see the JOURNAL, February, 1915, page 50.

Four (4), fracture of the greater tuberosity of the humerus, when mild and resulting from internal violence, can be diagnosed only by the roentgenogram; when of considerable extent and due to external violence it may be recognized by local pain, tenderness, swelling and ecchymosis. Fixation of the arm in moderate abduction for two or three weeks, interrupted at intervals for passive movements and massage, and followed by graduated movements to prevent stiffness, will bring about good results. In 6, the essential point is to prevent stiffness, and this can be accomplished by the same means as in fracture of the tuberosity. We find, in 7, fresh cases where there is tenderness about the joint, slight swelling, pain, and limitation of movement, and old cases which are diagnosed principally by elimination. Here, again, abduction is the most effective and speedy remedy. More uncommon than the others is 8, in which the most characteristic pain and disability is in drawing the arm forward; iodine, aspirin, and resting the arm in a sling bring relief. The characteristics of 9 are tenderness in the bicipital groove, pain on strongly flexing the forearm, and pain when the arm is swung back and forth. Treatment is by local rest and anodynes. For 11, see the JOURNAL, May, 1913. Although rare, 12 is so often mistakenly given for the cause of shoulder disability that it was thought well to include it in the list. Here we find tenderness of the nerves in the neck, the coracoid region and the arm, and, when long established, objective motor and sensory symptoms.

For the method of abduction referred to as treatment in many cases of shoulder disability, see the JOURNAL, February, 1915, p. 71.

An Undescribed Ulnar Nerve Trouble, Due to Tension from Scar and Its Cure. F. J. COTTON, Boston. *Boston Medical and Surgical Journal,* April 1, 1915.

Cotton describes seven cases. In all instances there was a history of injury of the elbow; in two there had been a fracture. The symptoms include pain, numbness in the ulnar nerve distribution, and partial paresis with atrophy of the muscles. "The mechanism is a fixation of the nerve by scar tissue, in the epitrochlear groove, or in the niche next below this point." The relief is surgical. In most of the cases Cotton released the nerve from the scar tissue, replaced it slightly forward, imbedded it in a mass of fat, and stitched it in place. The relief in most instances was rapid and in all cases complete.

The Weight-Bearing Properties of Amputation Stumps. (*Ueber die Tragfähigkeit des Amputationsstumpfes.*) J. BALLNER, Vienna. *Weiner Klinische Wochenschrift,* March 18, 1915.

The osteoplastic methods of Bier, Pirogoff and Gritti give excellent results, but are technically difficult of execution. Nevertheless, when the conditions are favorable, these operations are recommended. Ballner, however, commends the aperiosteal method of Bunge as the most widely applicable and feasible. This method affords a painless stump and can be carried out even when primary union is not obtainable.

Subpectoral Abscess With Report of Two Cases. D. RIESMAN, Philadelphia. *New York Medical Journal,* April 3, 1915.

Riesman reports two cases of this rather rare malady. The first symptom of subpectoral abscess is usually a sudden, intense, agonizing pain in the infraclavicular region, increased by breathing and especially by motions of the arm. The temperature is high from the beginning—fever may even precede the onset of the pain—and prostration is marked. There is nothing to indicate the exact nature of the trouble, and the physician will think that the case is one of brachial neuritis, pneumonia, or pleurisy. On examination there is tenderness in the pectoral region in the second or third intercostal spaces. As time progresses the pain does not abate much, but rather increases, although tenderness to touch may not be marked. Palpation gives a sense of very deep fluctuation, which is so elusive that when different men examine the patient simultaneously they are apt to disagree about it. Coincident with the appearance of this deep-seated fluctuation, the whole pectoral region becomes brawny and tense from the clavicle downward and outward toward the axillary fold. There was no enlargement of the axillary glands in either case. The fever is irregular and tends to be high throughout. The pulse is rapid, the face flushed. Delirium is present, chiefly nocturnal, sometimes diurnal, and the urine shows a high degree of toxic albuminuria. The leucocytes are considerably increased, especially the polymorphonuclear cells.

In one case, a small patch of pneumonia became evident toward the end of the first week. In both cases, the streptococcus was found in the pus. Riesman believes that early incision is better than waiting for fluctuation to appear.

The Treatment of Rheumatoid Arthritis of the Hypertrophic Type. JOHN L. PORTER, Chicago. *American Journal of Orthopedic Surgery,* April, 1915.

Porter found that in osteoarthritis he obtained best results when in addition to immobilization he injected into the involved joint a 3 per cent. formalin solution in glycerine. Subsequently he substituted olive oil for the

glycerine and used only 2 per cent. formalin; this reduced the pain following injection. His method is as follows:

1. Five minutes before the injection the patient receives one-fourth grain morphia with atropin.
2. The site for injection is infiltrated with novocaine.
3. Two per cent. formalin in olive oil is injected until the patient begins to feel the joint becoming distended.
4. The joint is immediately immobilized in a plaster cast. The cast is removed in two to four weeks.

Porter admits this procedure is empirical, but he is convinced of its efficacy.

Statistical Remarks on Tetanus. M. BAZY, *Medical Press and Circular,* March 31, 1915.

The statistics obtained in the intrenched camp around Paris embrace 10,396 wounded of whom 129 developed tetanus, i. e., 1.134 per cent. Of these 129 cases 90 proved fatal,—70 per cent. The statictics show the following:

(1) That tetanus may make its appearance a long time after the receipt of the injury,—as long as twenty-seven days. Even in these cases antitoxin should be administered.

(2) The greatest number of cases developed between six and eight days after the wound was received.

(3) Tetanus was particularly frequent in certain localities.

(4) Anti-tetanic serum is of great benefit. In hospitals where it is used as a routine measure in all wounds the proportion of tetanus cases is reduced to 0.418 per cent. In hospitals where it is given only in suspicious cases the rate is 1.279 per cent. In one group of 200 wounded, only one hundred had a preventive injection. Of the injected cases, one developed tetanus, and that on the day following the injection, so that the injection could be called prophylatic in name only. Of the uninjected cases 12 (i. e., 18 per cent) developed tetanus. Every wounded soldier should be injected whether the wound be by bullet or by shell. If the supply runs short, it had better be reserved for shell wounds, but economy may be realized by the use of smaller quantities at each injection.

Chronic Tetanus with Relapse Caused by the Persistence of a Splinter of Projectile in Wound. R. AUBOYER, Orleans, France. *Paris Medical,* April 10, 1915.

A soldier received a wound in the shoulder, a piece of shrapnel, remaining embedded deep in the tissues. Owing to the apparently little harm caused by the splinter and the difficulty attending its extraction, it was left in place. Thirteen days later the patient developed trismus and rapidly passed into a condition of severe tetanus. After six weeks the condition improved and the wound healed. The fragment of shell was not removed as it apparently caused no disturbance of function. One month later after a period of apparent recovery, a second attack of tetanus recurred. The patient was thereupon put under an anesthetic and after considerable difficulty the shell fragment was recovered. A complete recovery followed.

The author draws the following conclusions: A wide opening of wounds infected by projectiles and the extraction of fragments as soon as possible is imperative. This is the best preventive treatment of tetanus. In spite of these precautions, a prophylactic serum injection should be given. This should be repeated every eight to fifteen days, as the antitoxin is rapidly eliminated.

Gunshot Wounds of the Spine. O. MARBURG and EGON RANZI, Vienna, *Wiener Klinische Wochenschrift,* February 4, 1915.

In contra-distinction to gunshot wounds of the head, Marburg and Ranzi advise waiting before operation is done, until the condition is quiescent. If after four or five weeks there is no clinical change, lamenectomy is indicated. The operation is contra-indicated when there are pulmonary or abdominal complications; when the wound is purulent, and when there is a purulent cystitis with ascending pyelitis. This report is based upon the study of 35 cases.

The Exploratory Opening of the Sphenoid Sinus. CHARLES P. GRAYSON. *The Laryngoscope,* Vol. XXV, No. 1, 1915.

Grayson advocates the making of an artificial opening in the anterior wall of the sphenoid, according to the following technic: the inner or nasal portion of the anterior surface of the sphenoid is exposed as widely as possible by shrinking the tissues around it with cocain and adrenalin. When this has been done the course of the spheno-palatine artery is usually so distinctly visible that it can be readily avoided. The application of dilute tincture of iodin suffices for sterilization. Grayson perforates the sinus wall with a straight drill, which has a conical burr tip measuring six mm. in length and two and one-half mm. from its point to its greatest diameter. The point of interference is two or three mm. above the line which divides the anterior from the inferior surface of the sphenoid body and close to the attachment of the ethmoid plate in the middle line. The opening that is made is two mm. in diameter.

Angioma of the Uvula. MAX A. GOLDSTEIN. *The Laryngoscope,* Vol. XXV, No. 1, 1915.

About two years before examination the patient felt a roughness of the throat near the base of the tongue. Later there seemed some difficulty in free nasal respiration. Later deglutition was impaired. At the time of examination a definite tumor of the uvula could be seen which was large enough to impair speech, to cause frequent regurgitation of fluids through the nose, and to cause a constant, short cough.

The tumor was removed under local anesthesia. An eight-inch, widely curved, uterine forceps was clamped well above the vessels, a large aneurysm needle threaded with strong silk was passed from behind through the palate and two ligatures firmly tied on each side. Then the tumor was excised.

Tumors of the Uvula, with Report of a Case of Papilloma of the Uvula. P. SAMUEL STOUT. *The Laryngoscope,* Vol. XXV, No. 1, 1915.

Stout gives a résumé and reports a case of papilloma of the uvula in a girl of fourteen. About five months before examination she noticed a movable mass in her throat which on coughing would fly out and strike her front teeth. It hung to the end of a very long uvula, and was as large as an almond. It was easily removed under local anesthesia and proved to be a papilloma.

Cavernous Angioma of the Tongue. H. ARROWSMITH. *The Laryngoscope,* Vol. XXV, No. 1, 1915.

The case occurred in a girl of twelve, who from birth had a tumor occupying the middle third of the left half of the tongue. It could be emptied by pressure and remained flaccid as long as the blood supply was shut off. The patient was operated on under colonic anesthesia. A deep silk suture was passed through the left half of the tongue behind the swelling, and four similar sutures surrounded the tumor, which were not tied until the tumor was dissected out.

Empyema of the Thorax. ABRAHAM O. WILENSKY, New York. *Surgery, Gynecology and Obstetrics,* May, 1915.

Wilensky has critically studied 299 cases of acute empyema of the thorax occurring in the last ten years at Mt. Sinai Hospital. In the vast majority of the cases it is secondary to some other inflammatory lesion in the body. The average mortality was 28 per cent., varying from 50 per cent. in infants to 18 per cent. in adults. Children between 3 and 10 years of age showed the lowest mortality. Of the patients who recovered, 23 per cent. had more or less trouble with the healing of their wounds but Wilensky hopes that an improved technic will diminish or altogether eliminate sinuses. The pneumococcus and streptococcus were most frequently found. Blood cultures were usually negative except in the presence of complications (arthritis or osteomyelitis) or as an antemortem invasion.